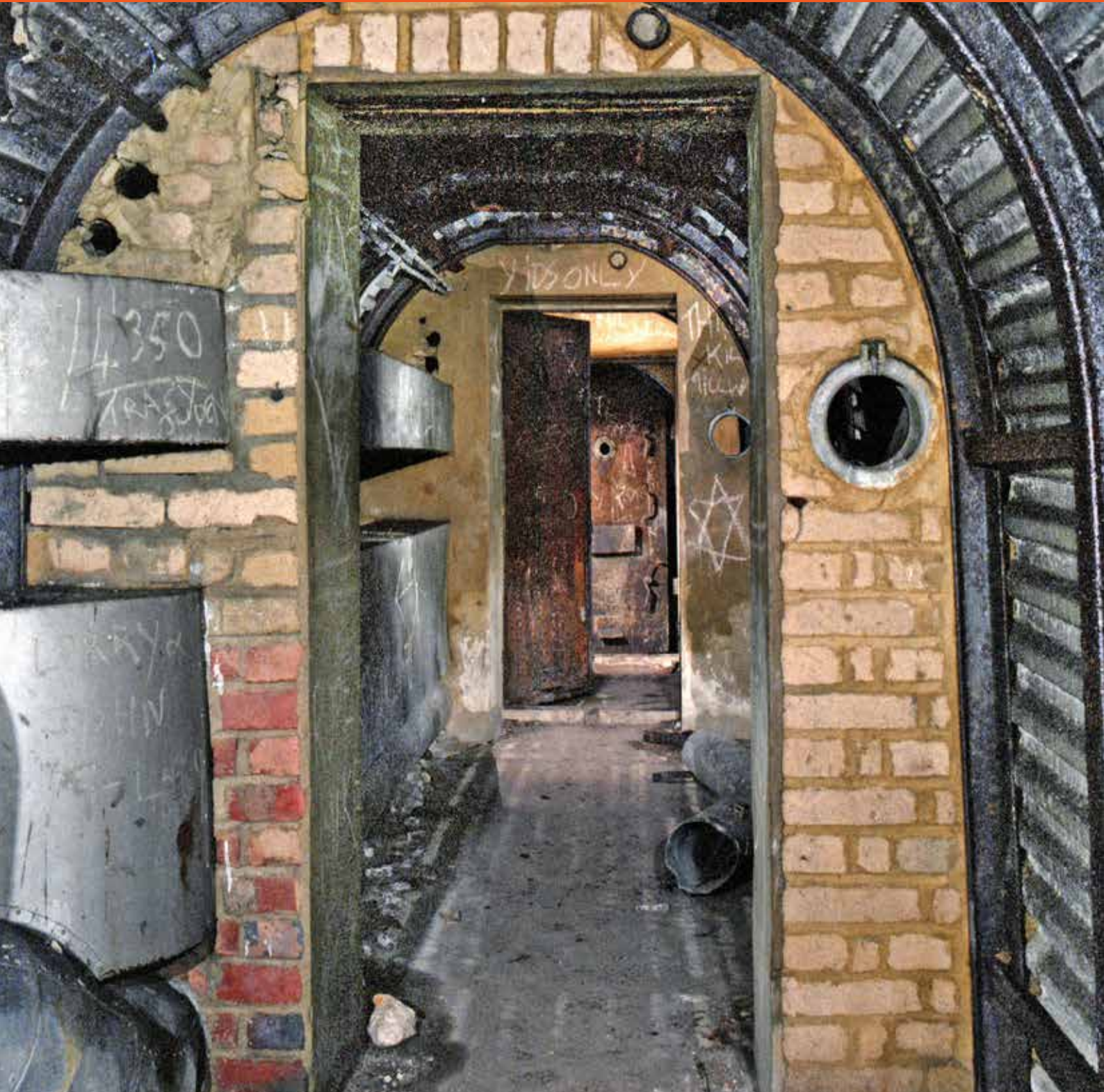


Subterranea

The Magazine for Subterranea Britannica



Subterranea Britannica



August 2015 Issue 39

IN THIS
ISSUE

RAF Daws Hill
ROC After 1991

Hamburg Weekend
Poland Weekend

Subterranea Britannica is a society devoted to the study of man-made and man-used underground structures and the archaeology of the Cold War. The society is open to all and its membership includes all walks of life. Members are invited to contribute to this magazine even if this just means sending very welcome snippets from newspapers and magazines.

Editor: Nick Catford 13 Highcroft Cottages London Road Swanley Kent BR8 8DB
e-mail editor@subbrit.org.uk

Contents

Chairman's Welcome _____	1	The Sub Brit Forum _____	24
Dates for Your Diary _____	2		
Annual General Meeting Minutes _____	3		
		Features	
		Visit to Dover Street and Hyde Park Corner tube stations __	25
		Fan Bay Deep Shelter Opening _____	31
		Subterranea Britannica Hamburg Weekend May 2015 ____	33
		Pinetree – RAF Daws Hill Trip Report _____	45
		Malta: Tourist highlights Sub Brit style _____	55
		Chislehurst Caves revisited _____	60
		Did Monty have a hideout in Reigate? _____	61
		Poland April 2015 _____	67
		Urgent Appeal for Craigiebarns bunker, Scotland _____	74
		Underground in Heligoland _____	75
		The Royal Observer Corps after 1991 _____	77

News

Archaeology _____	4
Conservation and Heritage _____	4
Health & Safety _____	5
Military and Defence _____	6
Mines and Mining _____	14
Miscellaneous _____	15
Books and Publications _____	18
Tunnels and Tunnelling _____	20

- Front cover photo:** Gas doors at the end of one of the three adits at the South East Command underground Command Headquarters at Reigate in 1986. Photo Nick Catford
- Back page upper:** Sub Brit visit to Hamburg: the bottom of the north shaft of the Old Elbe Tunnel. Only the westerly of the twin bores can be seen as the easterly one is under restoration behind the hoardings. Consequently the open tunnel currently has two-way traffic. We were fortunate to be granted permission to visit the work-in-progress where the original construction method and meticulous restoration could be appreciated. Photo Clive Penfold
- Back page lower:** The Sub Brit 'photographers' in the MRU complex in Poland. Left to Right: Jay Curtis, Jamie Bentley, Chris Wilkins, Mike Cox, Colin McElwee, Mike Tucknott. Photo Chris Irwin

Officers

President: Dan Cruickshank
Chairman: Martin Dixon
Vice Chairman: Richard West
Secretary: Linda Dixon
Membership: Nick Catford
Treasurer: Tony Radstone

Committee

Richard Seabrook: Webmaster
Chris Rayner: SB Meetings
Paul W. Sowan : NAMHO / SERIAC Liaison

Editorial Team

Editor of *Subterranea*: Nick Catford
Editorial Assistants: Martin Dixon & Linda Dixon
Layout: Martin Snow
Graphics: Tim Robinson
Proofreading : Stewart Wild

Bob Templeman : Shop Mailings
Chris Wilkins
Tim Wellburn

Newsletters of Subterranea Britannica are published by the committee of Subterranea Britannica. Original articles, book reviews, press cuttings, extracts from books and journals, letters to the Editor etc are welcome. However the Editor reserves the right not to publish material without giving a reason. The committee of Subterranea Britannica and the Editor do not necessarily agree with any views expressed and cannot always check the accuracy of any material sent in.

Printed by Hierographics Ltd, Sandford Lane, Wareham, Dorset BH20 4DY 01929 554454

Subterranea Britannica A Company limited by Guarantee Registered in England and Wales Registration No. 6447148
Registered Charity Number 1141524 Registered Office: Heathend Cottage, Windsor Road, Ascot, Berkshire SL5 7LQ



Chairman's Welcome

Martin Dixon

After years of dialogue I'm delighted that we were able to arrange a members' visit to the three-level bunker at former RAF Daws Hill in July. The bunker is owned by and within the grounds of Wycombe Abbey School in High Wycombe and Rob Jacobs (in particular) and I have spent lots of time talking to the school to reassure them that all aspects of health and safety (including child protection) would be properly managed by Subterranea Britannica. We are very grateful to the School for their trust in Sub Brit.

Although nominally a (non-flying) RAF Station, the site was in reality a US Air Force base, initially during World War II and later in the Cold War. It is comparatively rare in enjoying listed building protection at Grade 2*. This is partially because of its unusual construction as the inner bunker is built within an outer bunker with an air void between the two. The structure is also listed because of the extensive modifications made in the 1980s such as decontamination facilities and Faraday screening to provide protection against the nuclear threat.

In setting the visit up, we were inevitably faced with selecting a booking process that was as fair as possible to members. On previous popular visits (eg Brompton Road) we have used a ballot and for others, eg Clapham South, taken a 'first come, first served' approach. As we had 72 places for Daws Hill we went for open online booking but spread the booking across two weekends to try and cater for members' other commitments. An exact start-of-booking time wasn't announced which I know caused some frustration, but last time we published a start time the load crashed our website!

The final places weren't taken until just before 1800hrs on the second day of booking so I believe most members with a keen interest managed to secure a place. Thanks are due to Richard Seabrook for setting up the online booking system; we used the automated waitlist for the first time which is another plus. This certainly came into play as surprisingly over ten percent of confirmed attendees cancelled in the week of the visit.

All released places were filled but this does cause increased workload for organisers so hopefully this isn't a trend that will continue. Of course any online system disadvantages the small minority of members without online access, so I'd encourage use of library PCs for those without their own.

Perhaps the most important aspect was the visit itself which was a roaring success. A total of 72 Sub Brit members supported by nine of us who had trained as guides/helpers were able to visit the site and I think all were enthralled with the three-level structure and the plant and other artefacts that remain. It is chilling to realise that World War III could have been controlled from within its walls.

As well as the Sub Brit attendees, we were asked by the school to guide another twenty guests around, including members of local government, US Veterans and some media. They too shared our fascination with what lay beneath their feet and we gained some good publicity and press coverage. I'm hopeful that we can build on the relationship we now have with the School and arrange future trips so that more people can appreciate the ultimate in sheltered accommodation!

chairman@subbrit.org.uk



The VIP group being entertained by Martin Dixon outside the 'dirty' entrance to the Daws Hill bunker. Photo Linda Dixon



SUBTERRANEA BRITANNICA DIARY

Summary of Forthcoming Events

Sub Brit specific events

2015

- 4 - 6 September UK Study Weekend, Gloucestershire
- 19 September Paddock Open Day
- 10 October SB Autumn meeting, London (see p.30)
- 1 November Copy deadline for *Subterranea* 40
- 7 November SB Committee meeting
- Mid-December *Subterranea* 40 published

2016

- 16 January SB Committee meeting
- 1 March Copy deadline for *Subterranea* 41
- Mid-April *Subterranea* 41 published
- 23 April SB AGM & Spring Meeting, London
- May Paddock Open Day (TBA)

Other underground-related events

2015

- 12 September Reigate Caves Public Open Day (see P.4)
- 10 - 13 September Heritage Open Days, England
- 12 - 13 September European Heritage Open Days, Northern Ireland
- 19 - 20 September Open House London
- 25 - 27 September Hidden Earth National Caving Conference, Bristol
- September (runs throughout month) Open Doors, Wales <http://cadw.wales.gov.uk/events>
- September (dates vary by region) Doors Open Days, Scotland
- 2 - 4 October SFES Congress, St-Bonnet-le-Courreau, (42 Loire), France

2017

- 6 - 10 March Hypogea, Cappadocia, Turkey

For web links to these events please visit www.subbrit.org.uk/events
or contact the Society concerned

*If you know of other relevant events run by other societies, please let us know
so that they can be advertised in the next edition and on the website*



Sub Brit guides and helpers prepare for an open day at Paddock. See 19 September above. Photo Nick Catford



Minutes of the Subterranea Britannica AGM 18 April 2015

Lecture Theatre 1.31, Royal School of Mines, Imperial College, London.

The meeting was opened at 10.06hrs by the Chairman, Martin Dixon, who welcomed all those attending. 102 members were present.

1. Apologies were received from Michael Mortimer, Rob Barnes, Roger Starling, Robin Cherry, Alisdair McNicol, Richard Savage, John Burgess, Richard Seabrook, Mark Russell, Stewart Wild, Andrew Smith, Tim Wellburn, Stephen Oakes and Jim Hands.
2. The Minutes of the AGM 2014 were accepted by the meeting nem con. Proposed by Chris Rayner, seconded by Jon Knight.
3. The Chairman gave a short presentation highlighting the achievements of 2014 including the grants which have been made to various underground-related projects. Martin thanked all those who had contributed to Sub Brit's continued success and gave specific thanks to the Committee and to Mark Russell, Andrew Smith and Roger Starling who are stepping down from the Committee.
4. Sub Brit's Accounts have been signed off by the Independent Examiner and have been filed at Companies House and the Charity Commission. In answer to a question from the floor about whether Sub Brit is solvent, the answer is yes, we have sufficient funds to cover our activities and to continue to provide grants to suitable eligible projects.
5. The motion that nominations for Sub Brit's Committee be considered 'en-bloc' was proposed by Bob Clary and seconded by Sam Marko. The motion was carried nem con, with one abstention.
6. The motion to elect the following Committee members for 2015/16 was proposed by Alistair Graham Kerr and seconded by Robin Phillips. The motion was carried nem con, with one abstention.

Committee for 2015/2016

Martin Dixon Chairman

Richard West Vice Chairman New to post

Linda Dixon Secretary New to post

Nick Catford Membership Secretary

Tony Radstone Treasurer

Chris Rayner Member

Richard Seabrook Member

Paul Sowan Member

Bob Templeman Member

Tim Wellburn Member NEW

Chris Wilkins Member NEW

The following Committee Members stood down
Roger Starling, Andrew Smith and Mark Russell
The Meeting closed at 10.26hrs

Sub Brit on eBay

Readers may be interested to know that we have recently registered Subterranea Britannica on eBay as an 'eBay for Charity' partner. This means that anyone can nominate Sub Brit to receive a percentage (between 10 and 100%) of the proceeds of any eBay sale. More general information is on the eBay website



Our own home page from which you can initiate a sale is at:
http://donations.ebay.co.uk/charity/charity.jsp?NP_ID=64157

There's no pressure to do so but any money received will, of course, be used for our charitable ends



News

Miscellany compiled by Nick Catford & Paul Sowan

NEWS – ARCHAEOLOGY

Medieval dungeon identified at Faversham, Kent

Investigation of the site of a former gaol in Faversham has led to the interpretation of a deep, substantial, and possibly circular space as a dungeon referred to in a charter of 1546.

SOURCE: ALLEN, Tim, 2015, The discovery of a medieval dungeon in Middle Row, Faversham. *Archaeologia Cantiana* 136.

Wemyss Caves, Firth of Forth, Scotland

A project to digitally record Wemyss Caves has been extended. The pilot project to survey Jonathan's Cave and produce the Wemyss Caves 4D website in 2014 (see *Subterranea* 37, December 2014) was much praised. The Save the Wemyss Ancient Caves Society has now announced that the rest of the caves will now be similarly recorded, including Court Cave, Doo Cave, and Sloping Cave. Visit www.wemysscaves.org for further information. A conservation management plan for the caves has now been commissioned from Northlight Heritage.

SOURCE: CRAE, John, 2015, Wemyss Caves Recording Project extended. *Newsletter: Grampian Speleological Group* 160 (March 2015).

Excavations at Cathole Cave, near Swansea

Cathole Cave is located in an inland dry valley, Green Cwm, in the limestone of the Gower peninsula west of Swansea in south Wales. The discovery here of prehistoric cave art (a depiction of a deer) in 2010 led to the decision to erect a grille to protect the archaeology including the cave floor earth and any environmental and dating evidence it may contain.

A trench dug across the cave floor in connection with installing the grille was recorded in detail, adding to the results of previous excavations. Two probably Upper Palaeolithic flint implements are reported, as well as 1445 fragments of large mammal bones, and 4630 fragments of smaller animals, dating from 50,000 to 30,000 years old.

SOURCE: WALKER, Elizabeth A., David CASE, Claire INGREM, Jennifer R. JONES, and Richard MOURNE, 2014, Excavations at Cathole Cave, Gower, Swansea. *Proceedings University of Bristol Speleological Society* 26(2).

NEWS – CONSERVATION AND HERITAGE

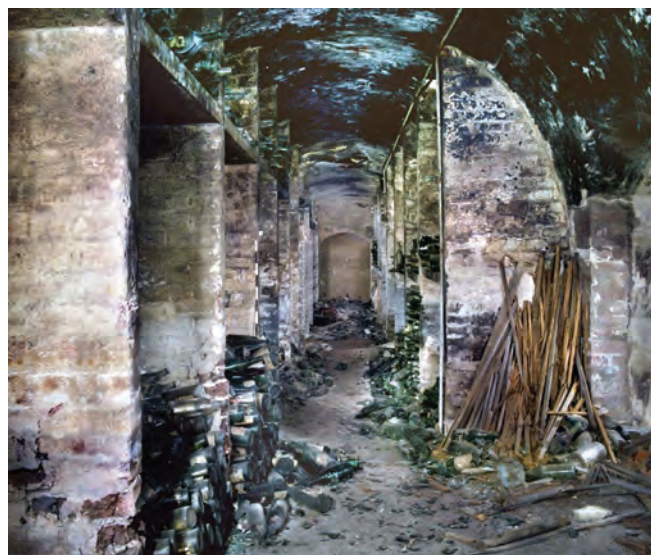
Glass-sand mines visitor attraction extended into wine vaults at Reigate, Surrey

The Wealden Cave and Mine Society (WCMS) has for some years, in agreement with Reigate & Banstead

Borough Council, opened 'caves' under the earthworks of Reigate Castle and either side of Tunnel Road as a visitor attraction. Guided tours are organised on five Saturdays each year, and have proved very popular. Former Subterranea Britannica chairman Paul Sowan is one of the team of 'Cave Guides'.

The Tunnel Road East and West sand mines have had a number of uses since mining ceased in the town, probably in or about the 1860s. These have included storage for beer made at a former local brewery, storage for military material during World War I, and as an air-raid shelter and emergency control centre during World War II. All these secondary uses add interest for visitors, and displays arranged by WCMS feature aspects of east Surrey mineral industries (including a relocated Roman tile kiln found in the town) and the war years.

The club is now extending public access to the adjoining rock-cut Tunnel Road Wine Vaults, also by agreement with the local Council. At some time a connection through about three feet or so of intervening sandstone was made from the mine, later blocked by a thick concrete slab (presumably to prevent theft from the wine vaults). Later still (by 1939) a hole about three feet wide and two feet high had been made through the concrete, making access possible, albeit uncomfortably so.



The wine vaults in 1986. Photo Nick Catford

This hole in the wall has now been expanded to walking height, allowing access to a further point of interest for visitors. Brick-sided wine bins with slate shelves, as well as rock-cut recesses in the sandstone walls, housed hundred of wine bottles, all empty (!) and all of about mid-twentieth-century date. The vault contains the non-working remains of a gas lighting system. Incised on the side of one of the wine bins can be seen WB 1864,



which can be taken to indicate that the vaults were in use by that date, and probably in the occupation of William Blackiston.

Club members have tidied the place up, and cleared large quantities of broken glass and modern junk to allow safe public access. The original entrances from Tunnel Road and adjoining premises have long been bricked up. The vaults appear to have been made for and used by a wine and spirits shop on the corner of Tunnel Road and Church Street, now a Café Rouge restaurant.

Facing Café Rouge, the Market public house has recently been taken over by the London brewers Fullers, and the main ground floor bar now features allusions to the tunnelled cellars at the back, although these are not formally open to public visits. WCMS members have been in discussion with the owners, and have assisted in clearing modern junk from the cellars, so perhaps the public at large may one day be able to see more of the underside of the town.

SOURCE: BURGESS, Peter M., 2015, Wine vaults on the east side of Tunnel Road have been tidied and made accessible. *News of the Weald*, 94.

Heritage crime and planned development at the Western Heights fortifications, Dover

About 1,000 historic wooden floor blocks have been stolen from inside the north entrance tunnel at Dover Western Heights Scheduled Ancient Monument. The theft is under investigation by Kent Police. There is some concern, also, on account of the missing blocks having been treated with a wood preservative thought to contain arsenic.

There is, too, currently a planning application under consideration for houses and a hotel to be built at the centre of the site.

SOURCE: THOMAS, Roger, 2015, Heritage crime, Western Heights. *Casemate* 103 (May 2015), page 7.

EH becomes HE and EH

English Heritage has been split into two distinct organisations, as from 1 April 2015. The ‘English Heritage’ name will be retained for an independently established registered charity which will manage the standing monuments, set up with a one-off lump sum from Government funds but otherwise intended to be self-financing. It retains the name to avoid the costs of replacing signs to and at EH properties all over England. The advisory and legal functions of the original English Heritage will be taken over by a separate body called Historic England, which will designate new Ancient Monuments, Listed Buildings and other ‘designated heritage assets’, and decide on issues such as Scheduled Monument Consent relating to them. The appointment of Chief Executives for the two bodies was published in March 2015: Kate Mavor for EH and Duncan Wilson for HE.

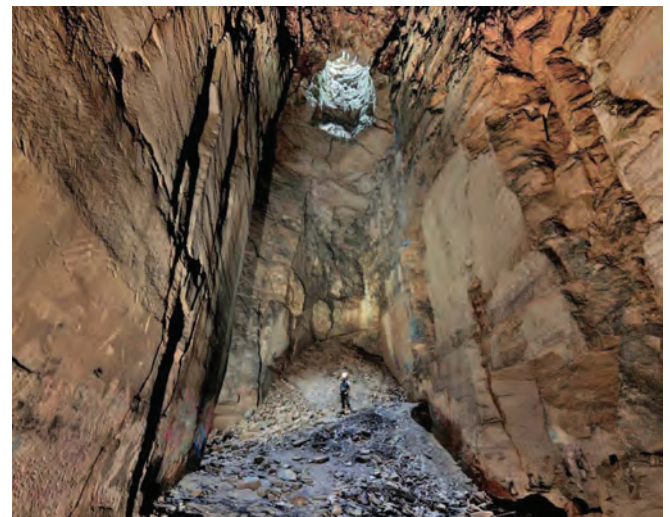
Both bodies are for the time being operating from the EH head office at 1 Waterhouse Square, off High Holborn in central London. No separate contact details were available in March 2015, although the front desk at English Heritage (as was) referred enquirers to www.english-heritage.org.uk/about

NEWS – HEALTH AND SAFETY

Fire Brigade rescue seven people from Box quarry

The Fire Brigade were called to the former Box freestone quarry near Bath at around 9.30pm on Saturday 27 June to rescue seven cavers who were lost in the ‘Cathedral’ area of the quarry. The cavers had found their way to one of the former entrances where the fire brigade were able to speak to them through a small hole; but it was too small to climb out.

Wiltshire Fire & Rescue Service said three people were unable to find their way out, but were rescued with the help of a local guide. A further four people were also found walking around the mines at the same time. The majority were young adults.



The cathedral chamber in Box Quarry. Photo Matt Emmett
After the incident Wiltshire Fire and Rescue tweeted: “Please do not enter mines unless you have the correct equipment and knowledge; stay safe.”

SOURCE: *Bath Chronicle*, 28 June 2015

Volunteer worker dies after falling into a WWII bunker near Folkestone

A volunteer worker at the Capel-le-Ferne gun battery near Folkestone had to be rescued after plunging 15ft into the battery plotting room on Thursday 9 July 2015. It is believed he had an epileptic fit which caused him to fall. Specialist rescue teams were in the area for much of the afternoon. Crews from the coastguard, fire service, the ambulance’s hazardous area response team (HART) and police were called to the scene just before 1pm and had to perform a technical rescue. The victim, 40-year-old Russell Ruck was airlifted to St George’s Hospital in London with serious head injuries; he died two days later.

The site is owned by a Rochester businessman Mr J



Button who has exposed the crew shelter, gun store and compressor house to No.3 gun and gained access to the underground plotting room, all of which are intact. His plan is to create the Capel Memorial Park with museum and access to the No.3 gun and the underground plotting room and underground dressing station. Kent Underground Research Group (KURG) tried digging out the deep shelter tunnels a few years ago for the owner but running sand collapses made this very hazardous and they pulled out after disagreements with him. Mr Ruck had been working on the container over the plotting room entrance shaft when he fell in.

SOURCE: *Kent Online*, various dates

NEWS—MILITARY AND DEFENCE

Residents complain as Leeds War Room is demolished

It was built to withstand the blast of an atomic bomb, so it's little wonder the demolition of a nuclear war bunker in Leeds is proving a headache for nearby residents. Those living nearby in Lawnswood say they are the 'end of their tether' as engineers work to demolish the bunker under the former government building on Otley Road. Developer Telereal Trilliam is currently preparing the site for housing after outline plans were passed by Leeds City Council in May last year.

The War Room at Lawnswood was one of thirteen opened in the early 1950s but within a few years nuclear technology left it obsolete as the H-bomb threat required a new breed of protected accommodation, the RSG. By 1958 it had become a sub-regional control, subordinate to the Shipton RSG at York. It also acted as a Leeds City Council sub-control, one of four in a ring around the city.



Lawnswood was the only bunker; the others were located in houses. Joint Home Office and Civil Defence use is unusual. After 1968 it was no longer required until 1981 when the upper level was refitted as Leeds City Council Control (the lower level was not used). In theory it was available until the end of the Cold War, but in practice it was unsuitable for the purpose, damp and rarely used. The bunker's demolition posed numerous difficulties due to its size – 40m by 30m and 7m deep – and having two floors with walls and roofing at least one metre thick. Residents complain the resulting noise is driving

them crazy with JCB machines “pecking away” at the site from 8am to 5pm. One said: “Following complaints from the local council, the developers were instructed to continue demolition with only one concrete breaker machine, although inevitably this will extend the work time necessary to complete the demolition.”

SOURCE: *Yorkshire Evening Post*, 4 April 2015

Hope Cove RGHQ gets emergency listing protection to stop destruction

Historic England granted an emergency Grade II listing to the former R6 ROTOR Station and Regional Seat of Government (RSG) at Hope Cove in Devon.

The complex had recently been purchased by a private buyer to be used for “Wine Storage”; however significant destruction to the exterior walls had begun including plans to add an external door to the lower bunker area.



The R6 surface bunker at Hope Cove. Photo Nick Catford

Hope Cove was created as an R6 ROTOR Station in the early 1950s and converted during the Cold War to be a Regional Seat of Government (later Regional Government Headquarters RGHQ 7.2). It consists of a semi-sunken bunker with one ground-level floor and one below-ground floor. Its significance is that it is one of the few surviving sites of its kind in the UK (many RSG/RGHQs were converted from older underground workings such as at Drakelow) meaning it is unique in British Cold War history. Sub Brit has visited the site on several occasions.

An Historic England Grade II listing for Hope Cove helps to ensure it is preserved for future generations to understand the vital role it played during Britain's Cold War.

SOURCE: *Britain's Cold War*, 23 May 2015 (web site www.britainscoldwar.uk/)

World War I defences on the Isle of Sheppey, Kent

The Isle of Sheppey is separated from mainland Kent, and the town of Sittingbourne, by the channel of the Swale. There are road and rail links to Sheerness, the only town on the island and an important former naval dockyard. The island is around 11 miles long, and of London Clay. Its coasts are crumbling clay cliffs in part, and low-lying



marshy land in others.

Although a less than ideal invasion point, as the Swale would still have to be crossed, it was heavily defended during World War I, the defence of Sheerness and command to the approaches to the Thames and Medway being of strategic importance. Victor Smith's lengthy and detailed paper described the field works and defensive structures.

SOURCE: SMITH, Victor, 2014, 'Barbed Wire Island': Sheppey and the defended ports of the Thames and Medway during the First World War. *Fort 42* [Fort is the journal of the Fortress Study Group]

Canada's largest privately owned nuclear shelter under threat

A battle is under way to save Canada's largest privately owned bunker known as Ark Two. The shelter is located in the village of Horning's Mills, 100 kilometres northwest of Toronto. The 10,000-square-foot shelter is composed of 42 school buses, which were buried underground as patterns for concrete that was then poured over to provide the main structure, onto which up to fourteen feet of earth was piled to provide fallout protection.

With construction beginning in the early 1980s (during the height of the Cold War), the shelter was designed to accommodate as many as five hundred people for the length of time required to allow the widespread nuclear fallout to decay to a level allowing a safe return to the surface after a cataclysmic nuclear event.



The entrance to Ark Two

Powered by redundant diesel generators, the heavily fortified shelter includes two commercial kitchens, full plumbing (including a private well for potable water and a large septic tank), three months' worth of diesel, a chapel, and a decontamination room. Ark Two is equipped with a communications room capable of broadcasting locally on the FM band, and throughout Canada and the United States on the AM and shortwave bands. A particularly novel feature is a collapsible, weather balloon deployed antenna, capable of being launched from within the shelter. All Ark Two communication equipment is EMP hardened and generator powered so as to be able to transmit survival information to the general public in the event of nuclear war.

Fire officials in the area think the shelter is a hazard. They wanted it permanently welded shut ahead of a survivalists' summit on the grounds in July that was expected to attract hundreds of people from across North America. Part of the draw was tours of the shelter. Owner Bruce Beach estimates there are about 215 bunks but the whole thing could accommodate 500 people.

The dispute, which Beach believes is personal, dates back to 2000. Citing public safety concerns, the Shelburne Fire Board ordered that the shelter should be sealed. Beach claims he made the recommended changes and is adamant that the bunker is structurally sound, adding that it was designed 'under the direction of a licensed structural engineer who built the Toronto subway.' The stand-off continues.

See https://en.wikipedia.org/wiki/Ark_Two_Shelter and www.youtube.com/watch?v=0H1Dh0bTc8Y

SOURCE: *Global News*, 10 July 2015

Archaeological excavation at Fort Cumberland, Portsmouth

Fort Cumberland, at the southeast of Portsea Island, was built and extended in the years 1782 to 1812 to command the channel whereby enemy invaders could gain access to Langstone Harbour to the east of the town. The structure is at present managed, and partially used, by English Heritage. Casemates 36 and 37 (accommodation or storage chambers built into the earthen defensive ramparts) have been found to be deteriorating on account of water penetration.

The excavation was primarily intended to understand the cause of this, and formulate remedial measures. The casemates in question had evidently been intended as barracks, as each was provided with a fireplace and a flue. The excavation, during which soil was removed from above parts of the two casemate roofs, revealed details of how the structure was built, and arrangements which had been built in to effect drainage and the operation of the flues and chimneys.



Fort Cumberland. Photo Ashley Middleton

It was discovered that the casemates had been effectively waterproofed against rain penetration by an impermeable layer of clay above them. The rainwater penetration problem resulted from the removal during the twentieth

century of the chimney pots and deterioration of the flues leading to them. The report is illustrated with an aerial photograph of the fort, and detailed photographs and measured drawings illustrating the structural details revealed by the excavation.

SOURCE: O'HARA, Paddy, 2014, Excavation above Casemates 36 and 37 at Fort Cumberland. *Fort 42* [*Fort* is the journal of the Fortress Study Group]

Wawne AAOR near Beverley in Yorkshire for sale

The golden rule for all home buyers is get a survey, but those viewing a recently advertised East Yorkshire house need have no concerns about its structural soundness. The bombproof bungalow in the village of Wawne, near Beverley, is a converted nuclear bunker. Its reinforced concrete walls and roof are two feet thick. There's no chance of subsidence either; its concrete foundations are 16 feet deep.

The property, on the market for £365,000 with Beercock, Wiles and Wick, is one of 31 Anti-Aircraft Operation Rooms built for the Army AA Command to service the new gun-defended areas of the Cold War as part of the ROTOR radar programme. With the exception of three AAORs which were converted from existing WWII AAORs, all were based on an identical two-storey concrete structure with a central operations well and sufficient accommodation to fulfil their admin and ops function. The structure could be surface-built or semi-sunk with one storey below ground level or set into a slope or hill. The design was flexible enough to allow the two entrances to vary from both on the lower level, both on the upper level, to one up one down or even one down one up. The bunker at Wawne was of the semi-sunken variety with one floor above and one floor below ground.



The once windowless blockhouse at Wawne now has windows all round

The demise of AA Command with the AAORs and gun sites was both sudden and complete. With the advent of guided missiles and the H-bomb, the Command was abolished in 1956 and the gun sites and AAORs became redundant. The bunker at Wawne then found a new use as an Emergency Planning Centre for Humberside County Council.

By the start of the twentieth century it was no longer required for that purpose and was put on the market for the first time. The bunker was bought by property developer Kevin Howe in 2003. He turned the redundant building into two properties, keeping one for himself and his family. His first job was to remove the diesel generator and air-filtration systems.

The next priority was getting natural light into the property, but putting windows and roof lights into the bombproof structure proved problematic. There were only three windows in the building and these weren't original, having been added by Humberside County Council when they took charge of the building. Mr Howe added a further 13 windows. To improve the Brutalist appearance he clad the building in block and render, while inside, he remodelled the space to create two spacious homes.

His house comprises a hall, dining area, sitting room, study, dining kitchen, four bedrooms and two bathrooms. The ventilated basement beneath has the same amount of square footage but remains largely unaltered, retaining some of its original features. He and his family are selling to move back to Kevin's native West Hull and he considers the bungalow's £365,000 price tag looks like a bargain considering the original build costs of the equivalent of £15m today.

"It's been a wonderful place to live and it will hard to leave," he said. "Although my wife thought I was mad to buy it, she will probably cry when we go."

SOURCE: *Yorkshire Post*, 13 July 2015

Defence of London during the Anglo-French 'Cold War': the mobilisation centre 'Reigate Fort', Surrey

Victor Smith has published an important paper on 'Reigate fort', one of a number of defensive works built in the 1890s for the defence of London. During the second half of the nineteenth century there was, in effect, a 'cold war' between Britain and France, and a perceived risk of a French invasion.

Thirteen 'mobilisation centres' were planned in a 70-mile arc from North Weald, Essex, to near Guildford in Surrey. South of the Thames, these were sited along the Darent valley and then westwards along the crest of the North Downs. In Surrey, these 'forts' were sited at (from west to east) Henley Grove and Pewley Hill (to guard the roads and railways though the river Wey gap in the hills at Guildford), Denbies and Boxhill (similarly guarding the Mole gap at Dorking), Betchworth, Reigate, Alderstead, Fosterdown (overlooking Godstone), and Woldingham.

There were to have been two 'forts' guarding the Brighton road and railway at the Merstham gap, although in the event only Alderstead was built, on the east side: that on the west side was not commenced. Intervening forts such as Betchworth, Reigate and Woldingham were sited on high points along the Downs, commanding ten miles or more of countryside to the south where (on a clear day) any advancing French troops could be seen.





Reigate Fort – the buildings are from left to right: Tool store, Underground Magazine, Casemate, Casemates (initially used for storing entrenching tools)

Smith’s paper draws on contemporary War Office files and other papers now in the National Archives, and includes also a full description of the Reigate ‘fort’ which is now in the ownership of the National Trust. The site is open without restriction to the general public, although access to the casemates and magazines is by guided tour only, for which a charge is made.

The structure is of earthen ramparts enclosing a grass ‘parade ground’, with brick and concrete structures, namely a sub-surface magazine, two sub-surface casemates, and a tool store and water tank. Outside the ramparts, and now privately owned, is the former caretaker’s house. All ‘forts’ were abandoned by the War Office by 1906.

At Reigate, the site had been used as a builder’s yard and a Scouts’ activities centre before being acquired and restored by the National Trust, which body has published a free informative leaflet and a well-produced booklet which can be purchased.

SOURCE: SMITH, Victor, 2014, Defence against invasion: Reigate Fort. *Surrey Archaeological Collections* 98.

Bury St Edmunds Guildhall to be transformed into a heritage centre

A fundraising campaign for £370,000 was launched at the beginning of July to help bring what is widely believed to be the oldest complete civic building in England back into use.



The WWII ROC Ops Room at the Guildhall seen from the balcony. Photo John Shere

The Guildhall Project aims to turn the Grade 1 listed Guildhall in Bury St Edmunds, which has not been open to the public for forty or fifty years, into a heritage centre, but, far from being a museum, it hopes to be a “varied and interesting” experience for people, with virtual reality and re-enactors in places.

The building had served the community continuously for more than eight centuries, with its uses including a meeting house, a court of law, an infirmary; during the Second World War it became a regional headquarters for the Royal Observer Corps, a vital operations room supporting the RAF during the Battle of Britain and beyond. It is the best preserved of the surviving WWII ROC operations rooms. (See *Subterranea* 36, August 2014.)

The plan for the Guildhall includes presenting the World War II operations room as it was at the height at the war with a ‘time gallery’ in the entrance hall, giving people the chance to view clocks from the Gershom-Parkington collection.

SOURCE: *East Anglian Daily Times*, 3 July 2015

Cash injection will preserve Uxbridge’s wartime bunker for future generations

The historic Battle of Britain bunker at Uxbridge is to receive a £1m refurbishment and could switch ownership from the Ministry of Defence to Hillingdon Council.

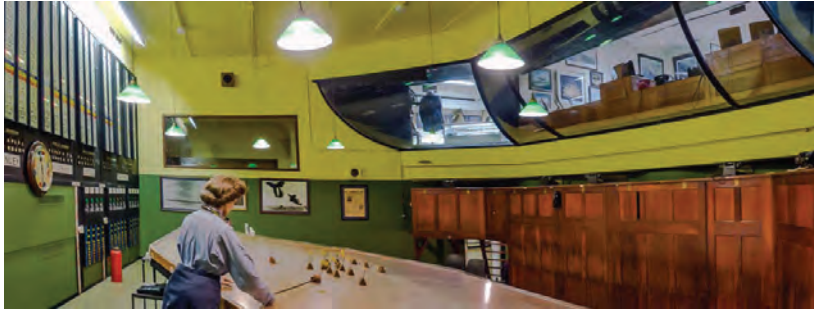
Chancellor George Osborne announced the cash injection to preserve a “vital part of our history” during his summer budget on 8 July. During his speech, Mr Osborne said: “The RAF’s Group Fighter Command Centre in west London was the place where the Battle of Britain was directed from – and it badly needs repair. Let its renovation stand as a monument to the heroes of the Battle of Britain and the days when aeroplanes flew freely over the skies of west London.” The bunker’s operations room was the site from which the RAF coordinated the air defence of London and the south of England during the Second World War.

Hillingdon Council is to invest a further £4.5m for a state-of-the-art visitor and education centre above the bunker. Council leader Ray Puddifoot said: “The Battle of Britain bunker has a special place in the nation’s hearts and it is fitting that the Government has recognised this in the budget. The London Borough of Hillingdon is proud of its close links with the military and we look forward to taking ownership of the bunker and seeing it flourish in the years ahead.”

London Mayor and Uxbridge & South Ruislip MP Boris Johnson was credited by Cllr Puddifoot for championing the cause with the Chancellor. Boris said: “I welcome the Government’s commitment to £1m of funding for the restoration of the Battle of Britain bunker. It will go a long way in helping to make the improvements needed to ensure this incredible piece of our past is preserved for future generations. The RAF command centre in Uxbridge is an underground masterpiece of WWII ingenuity that proved pivotal in defeating the Luftwaffe and ultimately



helping to destroy Nazi tyranny. The opportunity to visit the bunker is something we must preserve as a permanent memorial to Britain's indomitable fighting spirit."



The ops room floor with its plotting table overlooked by the gallery.

Photo Angus Kirk

Group Captain Andy Bacon, station commander at RAF Northolt, praised the role of the Uxbridge bunker in defending the UK during its "darkest hour" and said there are several options for the long-term sustainability, which will be assessed by the RAF in collaboration with Hillingdon Council.

SOURCE: *Get West London*, 14 July 2015

Replicated German defensive system near Dunwich, Suffolk

During World War II the British military authorities created a replica German defensive system for training purposes at TM 464683 near Dunwich on the Suffolk coast. Archaeological investigation and recording have revealed a cut-and-cover infantry shelter, a pill box, an anti-tank ditch and other features in the heathland setting. SOURCE: LIDDIARD, Robert, and David SIMS, 2013, A hedgehog on the heath: the Second World War landscape of Exercise 'Kruschen', Dunwich, Suffolk. *Archaeological Journal* 169.

Growing Underground open for business in September

Growing Underground, London's only subterranean farm, will start trading to restaurateurs in Covent Garden in September. The farm, which was located in the Clapham North deep shelter tunnels beneath the Northern line, is the brainchild of West Country entrepreneurs Richard Ballard and Steven Dring, in partnership with Michel Roux Jr, the Michelin-starred chef. Ballard and Dring first discovered the shelter while looking at the Sub Brit website in the hope of finding a suitable underground location for their planned farm. The farm has now relocated to the Clapham Common deep shelter which was vacated by Iron Mountain (secure data storage) when they decided not to renew their lease at the beginning of the year. The south exit stairs at Clapham North were in need of substantial and costly refurbishment and TfL decided the cost couldn't be justified so Growing Underground moved to Clapham Common and Clapham North is once again empty.

The first phase of the farm, which includes a sophisticated lighting and irrigation system, is in the final stages of preparation for commercial supply. Phase-one crops

include pea shoots, several varieties of radish, mustard, coriander, Red Amaranth, celery, parsley and rocket. "Our first shoots will be delivered to the surface in the next few weeks", said co-founder Richard Ballard. "After eighteen months of research, development, growing trials – and tribulations – we're about to start supplying into the market."

Michel Roux Jr added: "I'm looking forward to creating my first dish using produce from the world's first underground urban farm, less than two miles as the crow flies from the heart of London. It's great to be involved in this ambitious project, for which we have equally ambitious growth plans. Above all, it's fantastic to be able to source produce that is so fresh in the heart of Britain's largest city."



Chef Michel Roux Jr in one of the recently completed growing galleries at Clapham Common. The herbs seen here were a trial prior to full production starting in September and the herbs were donated for use at the FIA Formula E racing championship which took place in Battersea Park in June

The crops are grown in a sealed clean-room environment with a specially designed ventilation system, advanced lighting and a sophisticated irrigation that enables the farm to produce crops at very low energy. The farm's mission is to deliver fresh produce with zero effect on the environment and all energy is sourced from green suppliers.

Boris Johnson, Mayor of London, who supported the original idea for the farm through his London Leaders business start-up programme, also welcomed the launch, stating "This is a fine example of the dynamic start-ups that are helping London lead the world in green business innovation. I want even more entrepreneurs to help create these brilliant concepts that are delivering thousands of jobs and boosting London's green economy to almost £30 billion a year. I wish Growing Underground every success."

Members of Subterranea Britannica were able to visit the shelter during the growing trials in June 2014. For a detailed history of the Clapham North deep shelter see *Subterranea* 35 (April 2014).

SOURCE: *Daily Telegraph*, 29 June 2015



The WWI Home Front legacy

The Council for British Archaeology is coordinating a UK-wide project to assist communities in locating and recording First World War sites. This is to build on the results of the CBA's Defence of Britain project of a few years ago, with the emphasis on local community engagement.

Descriptions, historic and modern photographs, and maps and plans of sites are to be collected, encompassing buildings and sites requisitioned for wartime use, and the locations of bombing and crashed aircraft. The expectation is that data, at least, will be forwarded to local Historic Environment Records. Historic England and like bodies in Northern Ireland, Scotland, and Wales will consider designation as Listed Buildings or Scheduled Ancient Monuments where appropriate.

To take part in this project, register with www.homefrontlegacy.org.uk or email homefrontlegacy@archaeologyUK.org

SOURCE: COUNCIL FOR BRITISH ARCHAEOLOGY, 2015, WWI Home Front legacy. Fortress Study Group: *Casemate* 103 (May 2015)

Pre-WWII tunnel linking China and Russia found

A secret tunnel that was used by China and the former Soviet Union in China's Heilongjiang province has reportedly been discovered. The 34.2-mile tunnel, carved through rock, is said to have been excavated in 1933 and was pivotal in the exchange of intelligence between members of the Chinese Resistance and the Soviet Army, following the invasion of Manchuria by the Japanese two years earlier.

After the invasion the Japanese began constructing a series of underground fortresses in preparation for a war against the Soviet Union, and as many as three million slaves were used to build them over an eleven-year period. It is said that more than one million Chinese, Russian and Koreans died in the project, which included the building of the vast Dongning Fortress close to the secret tunnel.

The tunnel was uncovered following research by a member of staff at China's Dongning Fortress who was told about its existence during a visit to North Korea a few years ago, where he met a local expert who told him Koreans were involved in the construction of the secret passage.

In August 1945, just days after the bombing of Hiroshima, the Soviet army liberated Manchuria. This ultimately contributed to Japan's surrender later that month.

SOURCE: *Siberian Times*, 1 July 2015

Whale song plan for Cold War ROTOR radar station on Lewis

A community buy-out could see a former Cold War radar station turned into a place where tourists can listen to the sound of whales singing with hydrophones being placed in the sea to pick up the sound.

Local people at Gallan Head, on the Isle of Lewis, voted in favour of the plan by 27 to 2 on 29 July. They are also

hoping to set up a 'dark skies' space observatory. Other attractions include unexplored sea caves and cliff climbs that have never been tackled.

The radio and radar station was set up at Aird Uig sixty years ago as part of the final stage of the ROTOR Programme (Rotor 3) to provide radar cover for the north and west of the British Isles which were still exposed to attack, and to give low and surface level cover over the Atlantic. The station was fitted with a Centimetric Early Warning (CEW) Type 80 Mk 2 radar. The operations building was above ground, heavily built and designated R10, similar in internal layout to the underground R1 bunker.



The re-roofed R10 operations block at Aird Uig in July 2003. Photo Nick Catford

By the target completion date of August 1955 some ROTOR stations had already closed down and the introduction of the 'Comprehensive Radar Station' as part of the 1958 plan had no place for Aird Uig and the station closed in 1964.

The station however remained in RAF hands as a communications centre and through the 1990s it was home to 81 Signals Unit, the RAF's high frequency communications specialists. At the same time, the station also housed a low frequency transmitter providing RAF maritime low frequency communications. In 2000, the 81 Signals Unit detachment became redundant and the personnel returned to their base in Kinloss.

Following their departure the 618ft low frequency radio mast was dismantled. The Ministry of Defence now has no further use for the derelict buildings on the clifftop site. The local community is convinced the old base could help transform the economy of the area.

SOURCE: *BBC News - Scotland*, 29 July 2015, and Subterranea Britannica website

Fort Clonque, Alderney, Channel Islands

Subterranea Britannica members who enjoyed two visits to Alderney, one led by Robin Ware and the other by Brian Hillman, will be interested in two illustrated articles in a recent issue of *Casemate*, the magazine of the Fortress Study Group. On both occasions we stayed at Fort Clonque, now a Landmark Trust property which can be hired by groups.



Clonque occupies a very small island lying off the western end of Alderney, connected to the main island by a causeway which is covered by water at high tide. The fort was built in 1855 with German additions during World War II. Designed originally for two officers and 37 men, it now has comfortably appointed accommodation for about a dozen self-catering visitors.

The cited articles include some splendid photographs and descriptions of the structure, which is off-limits to the general public, but forms an ideal base for visiting groups to Alderney where (unlike Guernsey and Jersey) many of the underground works and surface structures from the German Occupation are informally accessible. SOURCES: DAVENPORT, Trevor, 2015, Resistance nest Steinfeste. Fort Clonque, Alderney. *Casemate* 103 (May 2015); KINROSS, John, 2015, Eight in Fort Clonque, Alderney. *Casemate* 103 *Ibid.*.

Cold War bunker in Salisbury could be used for a youth music club

Plans to move a youth music service into a disused bunker on Harnham Hill, on the outskirts of Salisbury, have met fierce resistance from neighbours. They fear that an influx of dozens of teenagers to the area will cause noise problems and could lead to antisocial behaviour. The plan involves The Sound Emporium, which has been running a music-based youth club on behalf of Wiltshire Council. The bunker, at the junction of Old Blandford Road and Grasmere Close, belongs to Salisbury City Council and has been unused for 25 years. It was built in the early years of the Cold War to house a military telephone exchange. By the early 1960s it was no longer required for that purpose and in September 1963 it became the new home for the Salisbury Urban District control centre, replacing the former control in the basement of 'The Council House' in Bourne Hill, Salisbury.



The emergency exit and vent shaft of the Harnham Hill bunker. Photo Andy Hebden

Local residents think it is not a suitable site as it is in the middle of a residential area and they feel they have been pressured into accepting the scheme by both Wiltshire and Salisbury city councils. In a statement, The Sound

Emporium said it wanted to assure people that concerns over noise and nuisance had been resolved and were of the highest priority when looking for potential sites. They claim the bunker is the ideal location for the project and could become a real asset to local young people.

Renovating the bunker, including electrics, ventilation and a new fire escape, will cost around £150,000. The Sound Emporium plans to put in £50,000. The other £100,000 would come from money given by the developers of Rowbarrow in East Harnham for new community facilities.

SOURCE: *Salisbury Journal*, 16 July 2015, and Subterranea Britannica website

Erich Honecker's Cold War bunker may become a visitor attraction, Germany

A three-storey sub-surface Cold War nuclear bunker, located in a forest about thirty miles north of Berlin, may become a visitor attraction. Bunker tours and an on-site hotel and restaurant are envisaged. The scheme was prompted by recent celebrations of the 25th anniversary of the fall of the Berlin Wall and the collapse of communist rule in former East Germany.



The main entrance to Honecker's bunker is in the basement of this abandoned building. Photo Nick Catford

A number of Subterranea Britannica members have visited Honecker's bunker, known as 5001, which is built as a three-storey concrete box mounted on massive shock absorber devices inside an even bigger concrete box with massively thick walls, buried in the forest. Amongst other things, we admired the Communist Party leader's tastefully furnished bedroom, and his wine cellar!

SOURCE; ANON, 2015, Underground attraction. *Group Travel Organiser*, February 2015

RAF Neatishead on the market (again) for £2.5 million

In recent years the primary function of RAF Neatishead was as a Control and Reporting Centre (CRC) for the south of the United Kingdom; as part of the UK Air Surveillance and Control System (ASACS), and as part of the larger NATO air defence. It used radar, ground-to-air radio and digitally encrypted data links.



In April 2004 the decision was taken to substantially reduce activities at Neatishead when all functions moved to a single control centre at RAF Boulmer in Northumberland. By 2006 the R3A had closed and the only active RAF role of Neatishead was the existing communications link to the Remote Radar Head (RRH) status controlling the remote site of RAF Trimingham with its Type 93 radar which was upgraded to a Lockheed TPS 77 radar in 2011. Much of the base was decommissioned in 2006 and in October local media reported that a buyer had been found for the now disused section of the base. The 25½ acre site was advertised again in January 2010, with an asking price of £4 million but it remained unsold.



RAF Neatishead from the air. The R3A bunker is bottom left with the Type 84 radar to its left. The R12 (Type 85 radar) building is top right with the WWII happidrome (now the Defence Radar Museum) to its right. In the centre the radio masts and the adjacent buildings will all be retained by the MoD when the site is sold.

Photo from Defence Radar Museum

In February 2013, the site appeared on eBay with a guide price of £2,500,000 but there was only one bidder.

Chartered surveyors Barlow Associates are now marketing the site again with the guide price remaining at £2,500,000. The 25½ acre site comprises 17 buildings, including a 5,000 sq ft gym, squash courts and three listed buildings. These are the R12 radar building and R3A underground operations block, together with the free-standing Type 84 radar modulator building and radar (decommissioned in 1994).

The Council believes that RAF Neatishead may have the potential to be converted / redeveloped to accommodate a variety of alternative uses, including:

1. Low density employment uses such as a secure data storage facility, or HQ office accommodation (eg. Officers' mess building) and workshops etc., for public sector, charitable or business organisation
2. Development of site for intensive farming uses, eg. mushroom farm / worm farm operations
3. Equestrian uses
4. Low key / small scale leisure and tourism uses.

A significant part of the base, inconveniently sited right in the middle, has been retained as the RAF still carries out communication work as part of Link 11 feeding information from RRH Trimingham into the UK air defence system. This will remain, together with the RAF Air Defence Museum, which was established on the air base sixteen years ago in the WWII Happidrome on the west side of the R12.

SOURCE: Barlow Associates sale brochure

WW1 bunker in Slovakia opened to the public

A refurbished WW1 bunker at Kamzik on the northern outskirts of Bratislava, the Slovakian capital, has been opened to the public as a tourist attraction. Visitors

can see an exhibition of period military artefacts from WWI including a map of fortifications of Bratislava from that time as well as period photos, while listening to an explanation of the site by members of the civic association 'Bunkre' which initiated the refurbishment. The main work started in mid-March this year and was completed in early July. Before that, the bunker was inaccessible, and was damaged and polluted internally. There is still a lot of work to be done to complete the restoration.

There is very little information about the bunker at Kamzik. It was built between 1914 and 1915, but it was not used and was sealed up after the war.



The recently excavated entrance to the Kamzik bunker

The bunker is open every Saturday from 09:00 until 15:00 or at other times by agreement with the Bunkre Association. Their web site is in Slovakian but it does include an extensive gallery of pictures of the restoration. www.bunkre.info/kaverna-6-kamzik/

SOURCE: *The Slovak Spectator*, 14 July 2015



NEWS – MINES AND MINING

Yet another possible chalk mine subsidence in Reading, Berkshire

A small collapse has appeared on private land behind houses in St Saviours Terrace in the Coley district in western Reading. The location is 'metres away' from the Field Road area of subsidences into chalk mines of uncharted extent which occurred in January 2000, resulting in substantial damage to a terrace of houses which had to be rebuilt. Although the voids under the Field Road properties and adjoining highway were backfilled, the full extent of the mine is not certainly known, site investigation being limited largely to sinking boreholes and lowering cameras; no attempt has been made to enter the workings. The ownership of the site of the latest collapse is, it seems, unclear.

SOURCE: READ, Carly, 2015, Fears over sinkhole at chalk mine site: residents want the damage repaired. *Reading Chronicle*, 14 May 2015

Popular New Zealand show mine forced to close

A popular tourist mine run by Sub Brit member John Gurney has been forced out of business after four years due to dramatically increasing compliance costs following the Pike River mining disaster. The New Zealand government's changes to mining legislation administered by WorkSafe's High Hazard Unit and the Department of Conservation turning off the power to the winch in the mine have all contributed to the mine's closure.

The mine is located on the Denniston Plateau near Westport on the west coast of New Zealand's South Island and has one of the richest, high quality coal seams in New Zealand. The Denniston Plateau was linked to the Conns Creek railhead below by the Denniston incline, a remarkable feat of engineering that fell 510 metres over 1.7 kilometres in two sections, incorporating dramatically steep gradients. For decades it was the country's largest producing coal mine, with an estimated twelve million tons carried down the incline during its operation from October 1879 to August 1967.

With a view to opening up the abandoned mine to the public, Department of Conservation staff, project-managed by John Gurney, restored the rail at the brim of the incline in 2009. The Denniston Heritage Charitable Trust then commenced work to make 'The Denniston Experience Underground Mine Tours' a reality. 360 metres of rail was laid along the old coal haulage route to the mine portal. 170 metres of the floor of the main drive of the Banbury Mine was excavated in order to accommodate a train.

Rail was laid into the mine and a winch installed at the top of the 1:12 slope to haul the train up. Power and water lines were installed along with audiovisual gear to replicate 1880s mining. Displays and lighting were installed in the walk-around areas and cross cuts. The Rail Safety Operating System was completed and the

Department of Conservation issued a concession to allow the new tourist attraction to carry members of the public. Finally a locomotive and carriage were obtained and the mine was ready to go. All that was needed now was someone to run it.



Tourists are taken through the Banbury Mine by train.

Photo Tony Page

In 2011 John Gurney decided to take on the concession (lease) as he had been the one responsible for building the railway and preparing the Safety Operating System. With his extensive knowledge of rail, health and safety systems and engineering he seemed ideal. He had 13 years of driving/guiding experience with the Rainforest Express in the Waitakere Ranges, Auckland, running tours along the historic water pipeline to the Upper Nihotupu Dam. Here he held the contract to maintain the rail, locomotives, carriages and rolling stock on this unique bush railway. Previous to this he had also been a volunteer for the Waitakere Tramline Society running shorter tours to the Waitakere Dam for 15 years.

And so it was that late in June 2011, the Denniston Experience began running underground mine tours on a commercial basis and was soon attracting visitors to the Buller district benefiting all who lived there. The 'hands on' tour was rated on Trip Advisor as a must-do with a 5-star rating.

Despite its popularity, the Denniston Experience was forced to close on 30 June 2015 because of stringent new safety requirements imposed by the new mining act which treated the 'tourist mine' as an operational underground coal mine. Despite approving and licensing the use of the winch in 2011, if the mine was to stay open visitors would now be required to walk into the mine using the emergency second egress. This would mean that a large portion of visitors, especially senior citizens and those with limited fitness, would no longer be able to do the tour as they would be required to negotiate a slippery, uneven, uphill walk with limited lighting.

They would be unable to enter by the original Banbury Mine portal or see many of the static displays in the main drive. These dramatic alterations would require a complete remarketing of the tour; including reselling the new walking tour and the redesign of all printed and



web-based media for a new underground experience that would clearly not have the same appeal as its predecessor. The Department of Conservation, owners of the mine and all the equipment, stated they were not prepared to upgrade the winch or locomotive or to pay for any additional ongoing mine or electrical certification. Following this blow, together with Buller District Council's recent decision to pull support for attracting tourism to the area, John Gurney felt that the mine was no longer viable as a tourist attraction and he regrettably decided to relinquish the concession and end public tours. SOURCE: The Denniston Experience press release (June 2015) and the Denniston Experience website: www.denniston.co.nz/

Hearthstone mine shaft descended to look for bats at Brockham, Surrey

East Surrey has a surprisingly high density of sub-surface mines and underground quarries. This reflects the geodiversity of the so-called 'Vale of Holmesdale' running along the foot of the south-facing escarpment of the North Downs, and proximity to the London market around twenty miles away.

East Surrey was in fact, historically, an important supplier of minerals to the capital from at least as far back as first-century Roman times, particularly for building-stones and tiles. Altogether this district was an important source at one time or another for brick-clays, fullers' earth, glass-sand, greystone (hydraulic) lime, and (in the 19th / 20th centuries) hearthstone.

Hearthstone was a mineral pigment, mined at various parishes from Brockham (near Dorking) to Godstone, used to whiten natural stone-slab floors, doorstep, hearths and the like. The westernmost mine was at and under the limeworks at Brockham, and was worked from the later part of the nineteenth century to February 1925. It was a small undertaking, usually employing no more than two or three persons.



Former Sub Brit member Vince Alkins abseiling down the recently excavated Brockham shaft in December 1997.

Photo Nick Catford

Plentiful documentation, rescued by former Subterranea Britannica chairman Paul Sowen, is deposited at the Surrey History Centre at Woking. However, no mine plan or photographs above or below ground have been located. Three drift entrances and two shafts had been effectively blocked by the 1960s. The site (including chalk pits and lime kilns in use until 1936) came into the ownership of Surrey County Council some decades ago, and is now managed as a nature reserve by the Surrey Wildlife Trust. A mine shaft in the limeworks yard was dug out by local cavers some time ago, but although a mine tunnel was located at the bottom this was so badly collapsed that any further exploration was abandoned. The shaft is beside a public footpath through the site, with a locked steel grille protecting the top.

On 15 February 2015 members of the Wealden Cave and Mine Society assisted the Surrey Bat Group and the Surrey Wildlife Trust with an inspection of the shaft, to assess its condition and possible use by hibernating bats. The bottom of the brick-lined shaft has collapsed, the shaft now being open to a depth of 14.7 metres. Two Natterer's bats were recorded hibernating in cracks in the brickwork, protecting the site from being backfilled. SOURCE: BURGESS, Peter M., 2015, Brockham shaft bat inspection, 15 February 2015. *News of the Weald*, 94.

NEWS – MISCELLANEOUS

Film festival held at the closed Jubilee line concourse at Charing Cross

A film festival was held for five days on the concourse leading to the closed Jubilee line platforms at Charing Cross station between 29 May and 2 June 2015.

Organised by outdoor cinema specialists Rooftop Film Club, the festival was being held to celebrate the start of the 'Night Tube' in September, and saw the station transformed into a unique cinema venue complete with popcorn stands and street-food vendors, cocktails and a busker.



Filmgoers waiting for a film to start on the Charing Cross concourse

This part of Charing Cross tube station has been closed to the public since 1999 when the Jubilee line that it served was extended from Green Park to Canary Wharf and Stratford. Since closure the platforms and concourse have



regularly been hired out for film productions, including the unforgettable subterranean scenes from the 2012 James Bond film *Skyfall*.

Gerry Cottle Jnr, co-founder of Underground Film Club, said: “Our aim has been to build unique experiences for the movie-going public – and there’s no more unique a setting than a genuine tube station. London Underground rarely allows this sort of access, so these screenings really are a once-in-a-lifetime opportunity.”

Working with London Underground, Underground Film Club screened cult-classics including *Strangers on a Train*, *Blade Runner*, *The Final Cut*, *American Werewolf in London* and *Paddington*. Gareth Powell, London Underground’s Director of Strategy & Service Development, said: “The introduction of the ‘Night Tube’, which will cut journey times and open up new possibilities across the night-time economy, is a historic step in our modernisation of the Underground and a real ‘first’ for the Underground that will boost jobs and benefit the economy by hundreds of millions of pounds.”

The screenings were planned to engage London’s many film-lovers in the possibilities that the Night Tube will bring and highlight the role that the Underground plays in supporting the city’s cinema industry. 100 tickets were available for each screening with tickets costing £14 for adults and £7 for children.

SOURCE: *London Evening Standard* and TFL website
Camden’s underground canal basin and winding engine vaults could be opened to the public

A vast new underground development bringing hidden vaults in the heart of Camden Town back to life is on the drawing board. Developers say the network of horse tunnels, vaults and an underground canal basin, which have not been seen by the public for decades, could be turned into a network capable of holding a restaurant, market space and exhibition areas.

The plan is being drawn up by Market Tech Holdings, which have bought up large parts of Camden Lock and own the Stables and Buck Street markets. The company would begin with the canal basin below a warehouse building near the Lock, known as Dead Dogs Basin. Architects are looking at how to open up the connecting brick-lined horse tunnels beneath homes in Oval Road and run up to Primrose Hill.

The plans would also include striking a deal with Network Rail to open what is known as the Winding Vaults, under the railway tracks east of Gloucester Avenue in Primrose Hill. The Grade II* listed vaults date from the 1830s and contained steam-powered engines that hauled trains from Euston station to the top of the Camden bank using ropes, where they were then attached to locomotives for onward journeys to Birmingham. Linked via tunnels to the Stables Market, it gives Market Tech the chance to create a new underground village.



*The interchange basin (popularly known as Dead Dog Hole) adjacent to Camden Lock in 1987.
Photo Nick Catford*

The vaults are currently semi-submerged in water but could be pumped out and used for a restaurant, heritage centre, and an exhibition space but would not be offered to private companies.

The project could be finished as early as 2017. Camden Railway Heritage Trust’s Peter Darley said: “The vaults are of international importance. They would be a wonderful public facility if they could be used, and if you added all the horse tunnels, it could be really great. Our key interest is safeguarding the access to show the heritage to the public while restoring and maintaining it so its original use can be appreciated. It could have a commercial use with a public heritage angle to it.”

Peter Darley talked to Sub Brit about the vaults and horse tunnels at our Spring day meeting in 2009. See also *Subterranea* 20 (September 2009).

SOURCE: *Camden New Journal*, 27 April 2015

An underground concert hall for London?

Discussion in February 2015 about the possibility of building a new world-class concert hall in London prompted a letter in the *Evening Standard* suggesting such a venue might advantageously be created underground. Such a place, the correspondent noted, needs no windows (forgetting that there is more than a performing space in a concert hall: people in associated offices, dining spaces, and public areas generally like to have windows and natural daylight!).

The question of soundproofing received no comment. In fact, sound travels better and more rapidly through solid materials, including the ground, than through air. Visitors to the Surrey Archaeological Society’s museum at Lewes in East Sussex will know that passing trains in the tunnel over a hundred feet below the foundations can be heard. And persons in the Rare Books reading room at the British Library can hardly fail to notice tube and/



or Thameslink trains in nearby tunnels at St Pancras.
SOURCE: WOLFSON, Neil, 2015, Build new concert hall underground. *London Evening Standard*, 20 February 2015

Power cable fire under Kingsway, central London

An electrical cable fire thought to have started in a junction box under or near Lincoln's Inn Fields caused massive disruption in that part of London from 12.40pm on 1 April 2015. Gas escaping from a leaking or fractured gas main seems to have added materially to the conflagration.

As, surprisingly frequently in recent years, manhole covers were blown into the air, flames and clouds of smoke belched forth. Reportedly some 2,000 to 5,000 people were evacuated from nearby buildings, including the High Courts of Justice and the London School of Economics. Up to seventy fire-fighters deploying ten fire engines attended, but had to wait almost three hours for the power to be switched off. By the evening ten fire-fighters were still in action, by which time the fire was reportedly isolated in a service tunnel. Roads were closed, and four West End theatres cancelled shows.

Westminster City councillor expressed concern at the worryingly frequent cable fires and sub-surface explosions. The London Fire Brigade reported nobody injured. The head of UK Power Networks was summoned to Westminster to be questioned.

The *Evening Standard* wondered if the West End might resemble a 'ghost town' over the Easter weekend, with electricity supplies to numerous addresses cut off. UK Power Networks said 2,000 customers had been reconnected by 2 April, but another 1,100 remained without electricity. Kingsway and parts of Southampton Row, the Strand Underpass, and Waterloo Bridge (northbound) were still closed to traffic the day after the fire. A mains gas leak into the tunnels, perhaps a consequence of the fire and explosions, or possibly a cause of them, was suggested.

A later report in *The Guardian* of 3 April informed readers that the fire was still burning, and that the number of persons evacuated from the area was around 3,000 more than an earlier report had suggested. Kingsway remained closed to traffic and, it was said, probably would not be reopened 'for a long time' as the heat-damaged surface would have to be repaired. The location of the fire was reported to be a 'complex layout' of service tunnels, 'difficult to reach' and including a gas main. Electricity cables had to be rerouted around the fire, which it seems, was out by 10.00am on Friday morning.

It is a curious fact that London has had a multitude of high-voltage cables below the streets, and in the London Underground tunnels, not to mention gas mains, for over a century. But events of the kind here reported appear to be a recent development, and overwhelmingly associated with electricity cables other than those serving the

underground railways. Presumably the powers that be are looking for an explanation for this recent development. The material on fire is presumably the rubber or plastic cable insulation.

SOURCE: GRIERSON, Jamie, and David FEENEY, 2015, Thousands evacuated as central London fire rages. *The Guardian*, 2 April 2015; LYDALL, Ross, *et al.*, 2015, Electrical blaze could cost £40m. Chaos as fire still rages beneath West End. *London Evening Standard*, 2 April 2015; TOPPING, Alexandra, and Jamie GRIERSON, 2015, Blaze underground continues to burn. *The Guardian*, 3 April 2015; YEATMAN, Dominic, 2015, Fire down below! 2,000 flee underground blaze, *Metro*, 2 April 2015; LYDALL, Ross, and Josh PETTITT, 2015, Commuters battle back to work as fire fallout goes on. *Evening Standard*, 7 April 2015

Isambard Kingdom Brunel's first building project is to become a performance space 150 years later

The 65ft-deep Rotherhithe entrance shaft to the famous Thames Tunnel will be opened for events in a scheme conceived by the Brunel Museum. The tunnel, connecting Rotherhithe and Wapping, was started in 1825 by the engineer's father, Marc, with the then-teenage I K Brunel as his assistant. Opened in 1843, it was the only project they worked on together. It became the world's first underwater tunnel and the birthplace of the modern underground system.



Artist's impression of the concert venue in Brunel's shaft

The entrance shaft will be made accessible with a new cantilevered staircase by London architects Tate Harmer LLP, in the place of long-gone staircases that allowed millions of Victorian visitors to descend into the tunnel. The new venue will host up to 135 people and will be available for hire as well as museum events, once building work is completed later this year. Robert Hulse, director of the Brunel Museum, said: "Brunel was a showman as well as an engineer, and I'm sure he would have approved of holding performances in this new underground gallery."

Subterranea Britannica held its 40th anniversary dinner in the shaft in 2014; access required using an awkward scaffolding staircase. Robert Hulse will be talking about Brunel's tunnel at our forthcoming Autumn Meeting on

Saturday 10 October 2015 at the Royal School of Mines, Imperial College, Kensington.

SOURCE: *London Evening Standard*, 21 April 2015

House in Finchley falls into basement extension, north London

Excavating additional sub-surface rooms below domestic properties has been seen by those with sufficient funds to be a viable alternative to moving to a larger house. However, basement extensions are often not popular with the neighbours, especially in quiet and leafy London squares, on account of the massive disruption resulting from multiple skip-loads of excavated earth having to be taken away from the domestic premises in residential areas. Then there is the problem of ground stability. Digging a cavernous space under your own property clearly has to be done with great care. And lateral support for your neighbours' foundation is also cause for anxiety. A basement extension in Stanhope Avenue, Finchley, went badly wrong on 24 November 2012 when the building above collapsed into it.



In March 2015 it was announced that the owners have been awarded £290,000 damages by the High Court, blame falling on the firm engaged to do the work. However, said firm is believed to be insolvent. The residents still owe 23 years of mortgage payments for the £345,000 flat which, it appears, had not been adequately insured.

SOURCES: WATTS, Matt, 2015, 'Like a disaster movie': couple tell how botched basement made house collapse. *London Evening Standard*, 16 March 2015; BINNS, Daniel, 2015, Couple win £290K after home falls to bits around them. *Metro*, 17 March 2015

Basement extensions as 'death traps', London

Unannounced Health & Safety Executive inspections of 107 basement extension construction sites in central London have revealed 'dozens of potential death traps' putting the lives of the persons working in them at risk. At almost half of the sites visited health and safety regulations were not being observed and, of these, 44 were served with prohibition notices.

Two sites were shut down completely on account of the dangers to which workmen employed at them were exposed. The sites inspected on 11 and 12 March 2015 were in Hammersmith & Fulham, Kensington & Chelsea,

and Westminster. Basement extension contractors in other parts of London are presumably taking note and reviewing their procedures.

The boom in basement extensions has resulted in numerous companies with no previous experience of this sort of construction work entering into contracts with property owners. "Those new to basement construction work are often unaware of the risks associated with the technically challenging nature of the work or of the standards required to ensure the safety of their workforce," it was said.

More than two-thirds of the prohibition notices served dealt with the risk to workers of falling from heights, either into unguarded excavations or through unprotected floor openings. Such hazards are one of the biggest causes of deaths on building sites. Unguarded conveyor belts lifting soil from excavations also give cause for concern. The inspections follow enquiries into the death of Anghel Milosavlevici (37) in 2010: he was crushed by the caving-in of the inadequately supported sides of an excavation in Ellerby Street in Fulham.

Seventeen deaths from this cause have been recorded in the last ten years, as well as 27 serious injuries. The Commercial Director of a construction company has been convicted of manslaughter and sentenced to three years and three months in prison. Another man concerned with basement extensions has been sentenced to nine months. SOURCE: BAR-HILLEL, Mira, and Jonathan PRYNN, 2015, Dozens of London basement digs could put lives at risk, say officials. *London Evening Standard*, 31 March 2015

NEWS—BOOKS & PUBLICATIONS

Quarrying industry in Wales

DETAILS: THOMAS, Ian A., 2014, *Quarrying industry in Wales – a history / Y diwydiant Chwareli yng Nghymru - Hanes*. Wirksworth: National Stone Centre: 224pp [ISBN 9781-87182738-5] [Parallel English and Welsh Text] [£19.95 inc p&p from the National Stone Centre, Porter Lane, Wirksworth DE4 4LS (www.nationalstonecentre.org.uk)]

This substantial A4 format volume with numerous illustrations and maps (many in colour) describes the largely modern and recent mineral extraction industries in Wales, excepting slate quarrying (opencast and underground) and coal- and metalliferous mining, for which subjects there is already a voluminous published literature. The author has family roots in Wales, and has recently retired as Director of the National Stone Centre based at Wirksworth in Derbyshire.

The minerals considered are principally aggregates (sand, gravel and crushed rock), dolomites and limestones, igneous rocks, sandstones, silica sand and silica rock. Most extraction sites, described and illustrated, have been opencast, exceptions being 'glory-hole' working for crushed rock at Criggion near Welshpool, and rottenstone (abrasive) mined in the Upper Tawe valley. Much historical



detail is provided for sites, both in terms of company and technological developments.

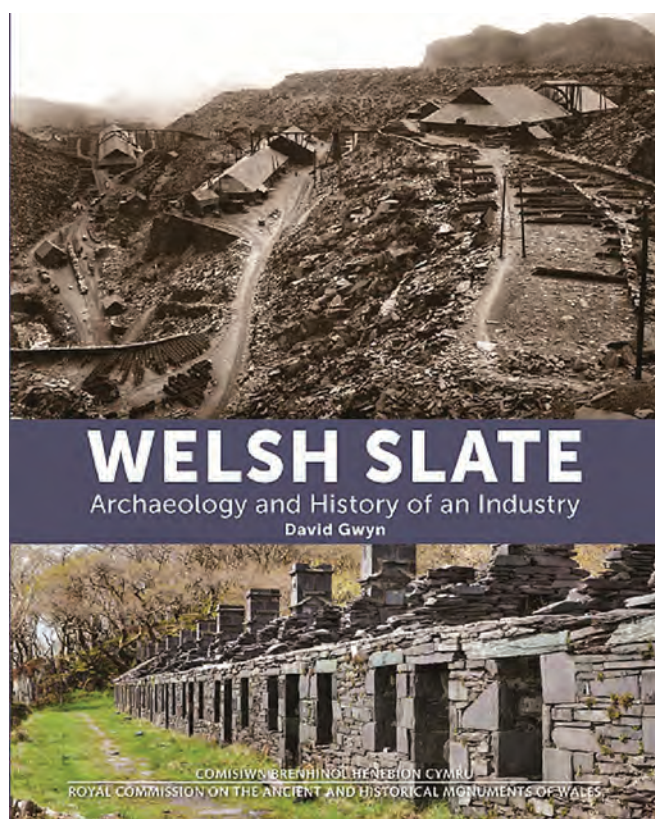
The contents are arranged in eleven sections representing geographical areas such as, for example, Anglesey and the South Wales Coalfield. There is a lengthy and valuable introduction providing an overview of the subject including statistical data. Several useful appendices include acronyms and abbreviations, a glossary of technical terms, a location index, and two pages of references to other published work, the titles cited dating overwhelmingly from the 1970s and later through to 2012. An index of mineral products might also have been useful if provided. Arguably, the interspersed English and Welsh captions and text in identical fonts might have been better distinguished to assist the smooth flow of reading.

Slate quarrying archaeology and history in Wales

DETAILS: GWYN, David, 2015, *Welsh slate: archaeology and history of an industry*. Aberystwyth: Royal Commission on the Ancient and Historical Monuments of Wales: 291pp [ISBN 9781-871184-51-8 [£45]

This very substantial hardback volume, with numerous illustrations and maps (many in colour) addresses all aspects of the slate quarrying industry from the geology and quarrying of the rock to shipping and its export abroad. David Gwynn has a number of research publications on the slate industry to his credit, and this volume constitutes an authoritative overview of one of Wales' most important economic activities.

The numerous colour photographs include superb oblique aerial views of opencast quarries and their associated workshops, settlements, and transport infrastructure. In contrast, there are very few views in underground



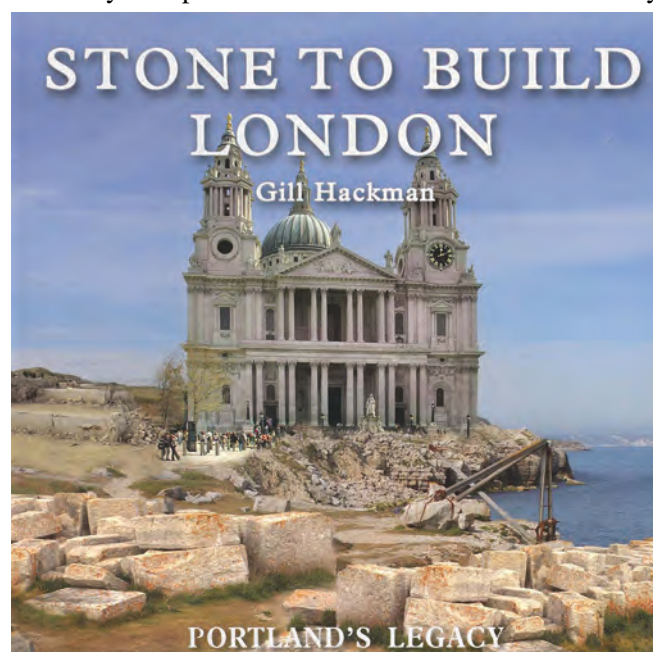
quarries: presumably the vast voids in a rather dark rock are challenging as photographic subjects.

Methods of quarrying, whether in open or underground quarries, and tools and plant are all described and illustrated, not forgetting the enormous waste tips so characteristic of this industry. The diagrams of how underground quarry caverns and their associated levels and inclines were related to each other within steeply inclined rock beds are very helpful. Processing works, transport systems, rail connections and locomotives are addressed, as are quarrying villages and communities, with liberal use of historic photographs and Ordnance Survey plans. The book is completed with a detailed and well-illustrated account of the uses of the end product embracing rather more than covering roofs.

Portland stone and London's quarries in Dorset

DETAILS: HACKMAN, Gill, 2014, *Stone to build London: Portland's legacy*, Monkton Farleigh: (4) + 311pp [ISBN 97809564405-9-4] [£25]

Dorset has had, and still has, two important building-stone quarry districts both of which, being coastal, have in the past supplied London by sea. The Isle of Purbeck has a number of underground quarries in and near the cliffs, whereas on Portland all the quarries have until recently been opencast. This very well produced hardback volume is noteworthy



for its wealth of well-chosen photographs, with both the quarries Portland stone was won from and the numbers of impressive buildings in which it has been used. Noteworthy, in the latter instance, is St Paul's Cathedral, where the material from Dorset dominates the numerous other types of stone used.

An oblique aerial photograph along with maps and geological sections make clear the layout of the quarries and their associated transport infrastructure. Quarrying techniques and tools are described and illustrated, as is the recent (from 2002) development of underground quarrying. Photographs of the tunnel entrance and quarry interiors are included.

The architectural use of the stone in London is lavishly illustrated, and entirely up-to-date with, for instance, new work at Green Park Underground station featured. A very useful chapter provides a guide to what to see on Portland. Unusually for England, much of the quarrying legacy is readily accessible and visible, as is the stunning cliff line from which much stone was taken. Appendices describe the geological aspects of the several stone beds and types; the history of the industry; and the use of the material outside London and abroad, as far away as the USA and Japan. There is a five-page bibliography, and a comprehensive index.

NEWS – TUNNELS AND TUNNELLING

Crossrail tunnelling nearing completion, London

The last two tunnel boring machines, *Elizabeth* and *Victoria*, were reported in December 2014 to be nearing the ends of their tasks in the eastern tunnels of Crossrail. By Spring 2015, it was expected, the TBMs which started from Limmo (by the Thames) and halted temporarily while the Whitechapel station box was completed, will be completed. The machines have now been moved forward through the station box and have headed westwards to Liverpool Street and Farringdon, at which point all Crossrail main tunnelling will have been completed.

SOURCE: HARVEY, Dan, 2014, Tunnelling nearing completion. *Modern Railways*, 72(796), January 2015.

Mexican drug baron escapes from prison on a motorbike through a tunnel

For a second time, Joaquín ‘El Chapo’ Guzmán Loera, the world’s most dangerous drug trafficker, has escaped from a high-security prison. At approximately 8:52pm on 11 July 2015, the Altiplano federal prison’s surveillance cameras recorded Guzmán approaching a shower area. Officials thought he was taking longer than usual in the shower and decided to check on him – his cell and the shower were both empty.

Guzmán slipped through a 1½ ft by 1½ ft gap in the shower floor and then climbed down a 32 ft ladder into a mile-long tunnel. The 5½ ft high and 2 ft 7 inch wide tunnel was illuminated and equipped with a ventilation system. A motorcycle mounted on rails was also found in the secret mile-long passage, which led to an abandoned construction site.

Authorities detained eighteen prison employees for questioning, ordered a massive manhunt for Guzmán, and shut down the airport in the nearby city of Toluca.

In 2001, Guzmán paid guards to help him slip out of the high-security Puente Grande prison near the city of Guadalajara following a previous arrest in 1993. After a 13-year manhunt, on 22 February 2014, Mexican marines surrounded his house in Sinaloa and caught the drug lord trying to escape through a secret door beneath a bathtub that led into a tunnel network.



El Chapo’s modified escape motorbike appears to be a Honda CG 125 or another similar variant

The flight of Guzmán, whose exploits made him a legendary figure in villages scattered in the sierra where he grew up in northwestern Mexico, seriously undermines President Enrique Peña Nieto’s pledge to bring order to a country racked by years of gang violence. Guzmán’s escape could also strain relations with the US, which wanted him extradited. They were concerned about how dangerous he was, and they had a lack of confidence in the Mexican authorities to stop him operating from jail. Guzmán became one of the world’s top crime bosses, running the powerful Sinaloa Cartel, which smuggled billions of dollars worth of cocaine, marijuana and methamphetamines into the US and fought vicious turf wars with other Mexican gangs. Before his recapture in 2014, the US Department of State had offered a reward of up to \$5 million for information leading to his arrest. SOURCE: *Business Insider UK*, 12 July 2015

Network Rail advised of a possible risk to main Brighton lines at Merstham, Surrey

Former SB Chairman Paul Sowan occasionally fields enquiries from engineers employed by or on behalf of Network Rail, these concerning possibly undermined track. In the last year or two, interest had focused on the two railway lines at Merstham, where they both emerge from long tunnels under the North Downs. The old line, opened to traffic in 1841, now carries mainly local and stopping trains. The new line, opened in or about 1899, is the one you are more likely to travel along on fast longer-distance trains en route for Gatwick Airport and the south coast.

The initial enquiry concerned a local story, which was enshrined in print in the 1970s, to the effect that the men who dug the first of the two Merstham tunnels intersected flooded mine galleries, resulting in collapses and the death of one Henry Hoof who was one of the partnership of three brothers who had the contract for this work from the London & Brighton Railway. Hoof certainly died, but not as a result of an accident in the tunnel, but of tuberculosis (a bacterial infection).

There was indeed flooding in the tunnel during construction, and collapses, but neither has anything to

do with underground quarries. The tunnel was driven entirely through Chalk, not though the underlying bed of Upper Greensand. There are certainly numerous and extensive building-stone quarries locally in the latter bed, but the nearest are a couple of hundred metres south of the tunnel, and the bed of rock in which they were excavated dips down to the north at an angle of around six degrees, so would be well below track level inside the south end of the tunnel.

What caused the flooding was no more than a rise in the water table in the chalk after an especially wet winter. The contractors had started tunnelling in 1838 after and during a series of dry winters, so encountered dry chalk for the first two or three years at work.

However, relieved of one worry, Network Rail was advised of two more! Engineering reports from the 1840s indicated that the floodwater in the old tunnel was drained out of the unfinished main line tunnel by digging a lower-level drainage tunnel to lower ground to the south. This presumably was routed at some depth below the railway, and was not revealed by Network Rail's desk study. Its inner end, probably blocked off on completion of tunnelling, has not been found for them. A culvert at shallow depth just under the trackbed now provides sufficient drainage.

A second possibly undermined length of track has been pointed out to Network Rail just south of the new tunnel portal, which is some way south of the first one. In the 1970s and 1980s local caving club members explored two crown hole collapses, one each side of and within about 50 yards of the fast line. Both were found to be associated with small sections of underground quarry tunnels at depths of the order of five or six yards below ground level, alongside the new line cutting which is here about three yards deep.

The two small quarry tunnel systems were explored and surveyed, and there was no sign of either of them running below the railway. However, numerous collapses prevented a complete exploration of either underground site so, for example, no trace of the former entrances could be found. If these two small gallery systems are connected below the railway, there may therefore be only two or three metres between the trackbed and mine ceilings.

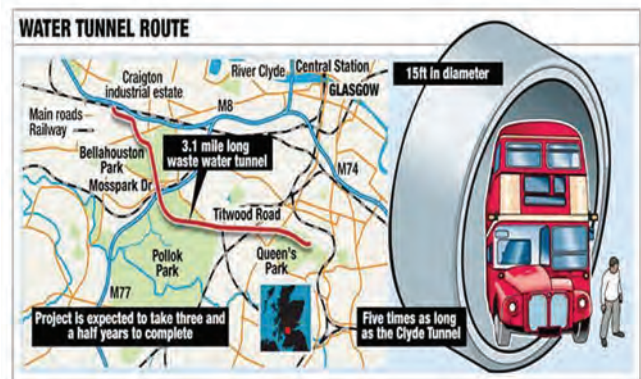
Network Rail have been advised to keep an eye on this location, or even to drill a borehole to check for voids at shallow depth. If, next time you take a train to Gatwick, you have a bumpy ride at this point, you may have detected track deformation reflecting a third subsidence between the two already known.

Three-mile tunnel that needs no planning permission to be constructed in Glasgow

Engineers are preparing to create a three-mile tunnel wide enough to fit a double-decker bus under two of Scotland's most prestigious parks. Work on what is part of the biggest upgrade to the city's waste-water network in more than a century is scheduled to begin in early 2016.

The £100 million Shieldhall Tunnel, which will be more than five times as long as the Clyde Tunnel, will be created between Queen's Park and Craigton industrial estate in a route that will take it under Pollok and Bellahouston parks. It is the jewel in the crown of Scottish Water's £250 million project to transform some of Greater Glasgow's sewerage infrastructure, a makeover of a complex system of subterranean pipes which began in early 2013.

The Shieldhall Tunnel project is described by the city council as "permitted development" which does not need special permissions and can be constructed under the



Sewerage (Scotland) Act 1968. Scottish Water say that the route has been "carefully selected to maximise the use of parkland and minimise disruption". But there is concern in some quarters that the 15ft wide waste-water tunnel does not require an environmental assessment and does not need planning permission.

Scottish Water's investment includes upgrades to about 200 Combined Sewer Overflows (CSOs) or outfall pipes – safety valves used to control waste water during heavy rainfall – on the River Clyde and tributaries such as the River Kelvin and White Cart Water at a cost of about £105m.

Some major projects have already been completed and the preparatory work for others is well under way. A separate half-mile-long sewer tunnel is to be installed beneath the streets of the Yoker area of Glasgow as part of a £7m project to help improve the water quality and natural environment of the River Clyde and tackle flooding issues. Scottish Water has just started work on the project, which involves the construction of a sewer tunnel more than 25ft deep from the grounds of the former Blawarthill Hospital to the north bank of the Clyde.

SOURCE: *Herald Scotland*, 11 July 2015

Double-deck trains for the UK would need enlarged tunnels

So substantially have rail passenger numbers risen in the UK that there is some urgency to increase the numbers of trains and/or seats in the nation's trains. Making trains longer is an obvious option, but this has limits. Already in the south of England we have twelve-carriage trains stopping at station platforms built for ten, for example.

On the Southern Railway system, passengers are now often advised not to travel in the rear two carriages



for short-platform stations. Pushing the seats closer together is unpopular: already leg-room is uncomfortable restricted on many trains, giving them the feeling of a ‘no frills’ airline. Running more frequent trains on already busy lines depends on revising the signalling to allow trains to run closer together nose to tail, which is thought-provoking at speeds of up to a hundred miles an hour.

British Railways built two four-car double-deck train sets at its Lancing Works in 1949, and ran these on and off for some years between London Bridge, Dartford and Gravesend, Kent. However, they were too cramped for passenger comfort, and for commuter trains took too long boarding and alighting at stations, so were scrapped. Double-deck trains are now being considered for the London – Southampton route by South West Trains. These are very common in and around, and between, large cities on the European mainland, so why not here? To understand the limitations to this approach, one needs to understand the difference between track gauge and loading gauge.

As almost everybody knows, the wheels of almost all trains in Europe, including the UK, are four feet eight and a half inches apart (there are wider track gauges in parts of Ireland, Spain and the former Soviet Union). But the trains themselves are often considerably taller and wider, so much more spacious for passengers. An upper deck on a train, as on a bus, calls for a taller train. And for most routes, the bridges and tunnel ceilings are just too low! Making the trains wider is also highly problematic, as tunnels would have to be widened, platform edges cut back, and lineside equipment moved back. Rejigging the whole UK rail network to ‘continental’ loading gauge would be massively expensive! Britain’s last-built main line before the Channel Tunnel Rail Link (HS1), which was built to the continental loading gauge (the Great Central Railway from the Midlands to London), was closed long ago.

HS1 was built with bridges and tunnels wide and high enough to take Eurostar passenger trains, and the planned HS2 line will follow suit, allowing much increased carrying capacity additional to the existing main lines to the Midlands and the North.

A handful of double-deck trains were built and used for SE London commuter services after WWII, but could run only on certain routes. Diversion to alternative routes, with tunnels too small and bridges too low, was not an option. They were scrapped, as there were further problems: boarding and alighting took too long, and headroom in the compartments was restricted. Quite apart from allowing higher overall speeds, the case for HS2 (and perhaps even HS3 in northern England) depends on additional capacity over and above what can be engineered on the congested existing main line.

SOURCES: BOOCOCK, Colin, 2015, Double deck trains. *Modern Railways* 72 (801); JOHNSON, David, 2015, Double deck dilemma. *Modern Railways*, 72 (800).

Box Tunnel bats concern prior to electrification programme

There are concerns that the overhead line equipment (OLE) which will be installed along the Great Western mainline this summer could interfere with the bats which live in Box Tunnel.



Preserved ex-GWR 6000 class loco King Edward I emerging from the Box Tunnel in 2006

The Bristol Temple Meads to London Paddington line will be electrified over the summer, to pave the way for faster trains and improved services from Bath Spa. From July 18 there will be one train an hour to London from Bath to avoid Box, which will take an extra half an hour to get to London via Melksham. There will then be no trains running east of Bath throughout August, with a shuttle service running west to and from Bristol Temple Meads. The track in Box Tunnel will be lowered to allow room for the cables but there are a number of bat species which have made the tunnel, built by Isambard Kingdom Brunel in the 1800s, their home.

Natural England and Network Rail have been working together to address the problem for the last couple of years. A Network Rail spokesman said: “There is a concern that the presence of the OLE could disrupt bat foraging routes,” but he added “there is no evidence to suggest that the type of overhead lines proposed within the scheme pose a potential risk of collision to bats. It is unlikely that bats would be at risk from collision or barotrauma as they would be with moving objects. Bats have highly specialised echolocation and are adept at flying through cluttered environments like woodland. Therefore it is likely that bats would be able to locate and avoid the OLE equipment.”

Bats are protected animals but a European Protected Species licence, for when work will have an impact on wildlife, isn’t required for this temporary work. Earlier this year Natural England provided advice on how best to carry out the planned improvements within the Box Tunnel, whilst protecting the resident bats.

SOURCE: *Bath Chronicle*, 10 June 2015

Tunnelling to commence on Northern line extension to Battersea, London

A three-mile extension of the London Underground's Northern line from Kennington to new sub-surface stations at Nine Elms and a terminus at Battersea is to be tunnelled, starting in 2015. The new extension will serve the redeveloped Battersea Power Station site, and is expected to open in 2020.



SOURCE: ANON, 2015, Northern line extension gets the go-ahead. *Railway Magazine*, January 2015

One new rail tunnel for two old ones, Greater Manchester

The railway lines between Bolton and Manchester Victoria pass through two parallel single-track tunnels just to the east of Farnworth station. Oddly, one has a greater diameter than the other: why is not clear. The line is being electrified, and additional clearance is needed for overhead wires.

The somewhat radical solution to this problem is to bore a single larger double-track tunnel. The larger of the old tunnels is to be back-filled and sealed. The smaller older tunnel will be used, eastbound and westbound trains alternating, until the new tunnel is opened, after which it will be abandoned. Work commenced on 2 May 2015, with completion scheduled for October. The Farnworth tunnels are 295 yards long.

SOURCE: ANON, 2015, Farnworth tunnel work begins. *Modern Railways* 72 (801)

Tunnels in Warwickshire

A recently published volume in the Oakwood Library of Railway History series, primarily devoted to railways and locomotives associated with cement and lime works in Warwickshire, is of potential interest to members of *Subterranea Britannica* on two counts. Firstly, at several locations where opencast pits have been worked either side of a public road, the internal works railways have linked them by tunnelling under the highway, resulting in a number of short tunnels at these places.

Secondly, an appendix has been included on the cement and limeworks at Totternhoe, which of course is not in Warwickshire, but near Luton in Bedfordshire. At this location there were, and probably still are, tunnelled quarries in the lowest beds of the Chalk for a hard variety of that rock used for some centuries for building-stone.

SOURCE: LELEUX, Sydney A., 2014, *Warwickshire lime and cement works railways*. Usk: Oakwood Press: Oakwood Library of Railway History: 288pp [ISBN 9780-85361-737-2] [£19.95]

Tunnelling in Wookey Hole, Somerset

The show caves at Wookey Hole have long been a popular tourist attraction, rivals to the nearby Cheddar Caves on the southern flank of the Mendip Hills in Somerset. Public access was at first possible only to the parts of the system near the entrance. Visitors would be told of wonderful caverns beyond the public limits, accessible only to experienced cavers and cave divers possessed of the necessary equipment and skills.

At first, at Wookey, members of the public could visit the first three of at least twenty chambers. In 1979 a tunnel was driven to allow visitors to reach chamber 9. On 21 May 2015 a start was made on a new tunnel, 70 metres long, to allow tourist access to chamber 20, expected to be reached about a month later.

A single blast is detonated each night, after bats and tourists have exited the caves. The first blast removed eight tonnes of limestone. The operation is estimated to cost between two and three million pounds, with another one million pounds needed for developing the tunnel and chamber for visitors. SOURCE: *Late News from Wild Places Publishing*, 26 May 2015.

Where does the Godstone quarries water go?

The stone quarry tunnels under Godstone Hill, Surrey, under and both sides of the A22, run in under the North Downs escarpment around 300 yards, following the rock bed which is inclined downwards to the north at an angle of about 5°. The inner and lower ends of the tunnels are often flooded, and the working faces inaccessible as a result of rock-falls. Historical records indicate that when groundwater levels are high, the inner two-thirds of the quarry is flooded, and indeed the floodwater is then accessible to inspection. Ultimately, after reduced rainfall, the water drains away again.

Where does the water go? Little if any trickles out southwards, as below the Upper Greensand beds there is a thick bed of impermeable Gault Clay.

The Upper Greensand and the beds of Chalk lying above it can be considered to be a single aquifer, water passing more or less equally freely between the two. So the Upper Greensand floodwater in the quarries runs northwards and is able to join the water in the stratigraphically higher Chalk, the latter beds further north being of course at a lower level on account of the inclination of all the strata. Five miles or so to the north of Godstone is the Sutton & East Surrey Water Company's pumping station at Purley (now operated as a remotely controlled electric pump below a Tesco store), where a total of four wells, each of them continued downwards by boreholes, have been sunk into the Chalk. The borehole of No. 4 well extends to 308 feet below sea level, and passes through the whole thickness of the Upper Greensand, into the top beds of the Gault Clay. The likelihood is, therefore, that at least some of the Godstone quarry floodwater finds its way into the teapots of Coulsdon and Purley.



The Sub Brit Forum

-or- How to keep up to date with events and news

If you are not using the Sub Brit Forum you will be missing out on news about trips and events and on general information and news on underground matters. But did you know that you can still get this information **emailed** to you? To get this set up you will need to log on to the Forum at least once (see below). Once you are set up you can even reply by email to topics and automatically update the Forum. Here are some hints to help you:-

First, Log on to the Forum (see below). Have a look round the Forum to see what's there. You can browse Categories (eg 'Cold War', 'Transport') by clicking on 'Categories' in the middle of the top line (or in the grey box, top left, for a fuller display). You can search for Topics (eg 'Tube Map') by using the 'Magnifying Glass' symbol near the top right hand corner. All of the history from the old email list has been loaded as an archive and will be searched too. To get back to the Forum Home Page, click 'Subterranea Britannica' on the black banner. (To then get back to mySUBBRIT, click 'Go to mySUBBRIT' - written in very small letters above the Subterranea Britannica logo.)

To get emails about material posted to the Forum, then click on the big bold letter in the top right hand corner (this will be the first letter of your username) and select 'Preferences'. Then tick the box which says 'Send me an email for every new post (unless I mute the topic or category)'. To stop emails ('mute') about a topic or category, see step 4 below

To be *selective* about what emails you receive from the Forum:

1. Navigate to 'Categories' from the main Forum page.
2. Click the Category of interest.
3. In the top right-hand corner, click the button marked with an 'O' next to 'New Topic' and select 'Watching'. You will then get emails for every post here.
4. If you've enabled the tick box for 'everything' (above), then you can opt-out of any Categories you don't want by selecting 'Muted' instead (otherwise you will receive everything by default).
5. You can change your preferences at any time.

And if you don't want anything emailed to you – then we suggest you just browse the Forum!

How to log on to the Forum – reminder

- * Go to <https://my.subbrit.org.uk>
- * Log in using your mySUBBRIT credentials (username and password).

If you've forgotten them use 'Request new password'.

- * Click 'Access member forum' on the Member menu.



Visit to Dover Street/Green Park and Hyde Park Corner tube stations

Nick Catford



The lower lift landing at Hyde Park Corner survives in surprisingly good condition considering it was last used in 1933. The original tiling with its unique colour theme survives intact. The emergency stairs is the third opening to the right. Photo Nick Catford

A history of Sub Brit visits to closed tube stations

When Subterranea Britannica first approached London Transport to obtain permission to visit closed underground stations in 1995, the security and health and safety issues that make visits almost impossible today were not an issue. We were told that any stations could be visited on payment of a group fee of £100 per station to cover the cost of providing staff to accompany the group; on this occasion we chose Down Street and Aldwych.

At Aldwych (which had closed on 30 September the previous year), we were allowed to walk along one running tunnel to Holborn and then walk back down the other tunnel to Aldwych. At Down Street we entered through the street-level building and down the stairs. After we had explored the disused and dusty station, a train was signalled to stop at the short section of platform

A train is signalled to stop for the Sub Brit party at Down Street station in 1995. Photo Martin Dixon



that survives and the group boarded the train through the driver's cab to return to Green Park. This caused a certain amount of mild alarm amongst passengers, many of them tourists on their way into London from Heathrow.

Since then, visits have proved more difficult with health and safety, staffing levels and terrorist fears being cited as reasons for refusal. From 2008 until 2009 Sub Brit member Philip Lindhurst, who worked in the control room at Euston, was able to arrange visits to a number of disused stations.

Through a network of contacts he had made, he was able to arrange trips for groups of Sub Brit members to many of the capital's disused tube stations and other related sites. These sadly came to an end following a change in TfL official policy. Visits have also taken place to the closed Jubilee line platforms and service tunnels at Charing Cross thanks to Sub Brit member John Poole who, as Station Supervisor at Charing Cross, had the authority to arrange visits. Both Philip and John have now retired although they remain active Sub Brit members.

A small number of other visits have been arranged by individual members including specially extended Aldwych tours by LT Museum volunteer Richard West. Roger Cleaver managed to get permission to visit South Kensington disused tunnels and equipment areas and Martin Dixon and Nick Catford have arranged visits to the deep-level shelters at Clapham South and Clapham North respectively. Finally, the MoD granted permission for Sub Brit to visit their property at disused Brompton Road station before its recent sale.

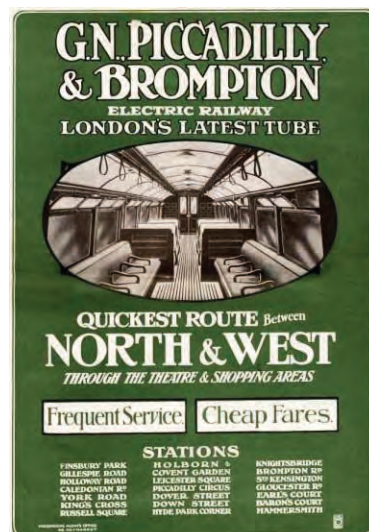
In the summer of 2014, your author was given the opportunity to visit two stations, Green Park and Hyde Park Corner on the Piccadilly line. Neither station is closed but both were substantially rebuilt in the 1930s with the original lifts being replaced by escalators, the resiting of the station entrances, and the original entrance subways and lift landings being taken out of use. Green Park had a particularly interesting history of reuse during WWII as detailed below.

The opening of the Great Northern, Piccadilly and Brompton Railway

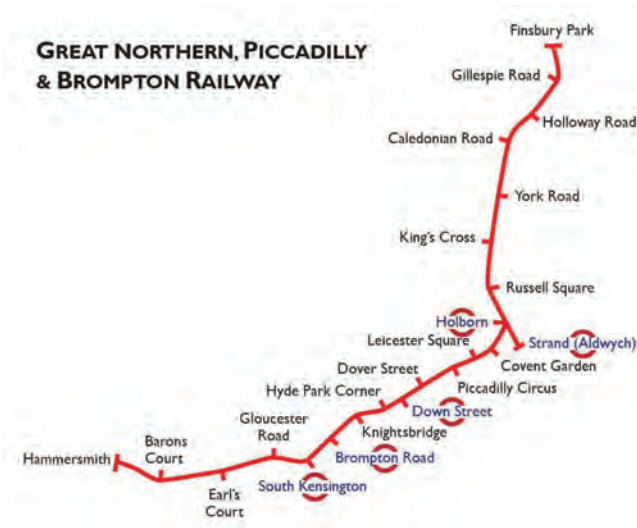
The Great Northern, Piccadilly and Brompton Railway company (GNP&BR) was established in 1902 to build a deep-level underground railway in London. The GNP&BR was formed through a merger of two older companies, the Brompton and Piccadilly Circus Railway (B&PCR) and the Great Northern and Strand Railway (GN&SR). It also incorporated part of a tube route planned by the District Railway.

The combined company was a subsidiary of the Underground Electric Railways Company of London (UERL) which was formed by American financier Charles Tyson Yerkes. The B&PCR and the GN&SR were established in 1896 and 1898 respectively, but construction of both railways was delayed while funding was sought. In 1902 the UERL, which already controlled the District Railway, took control of both companies and quickly raised the funds, mainly from foreign investors. A number of different routes were planned, but most were rejected by Parliament.

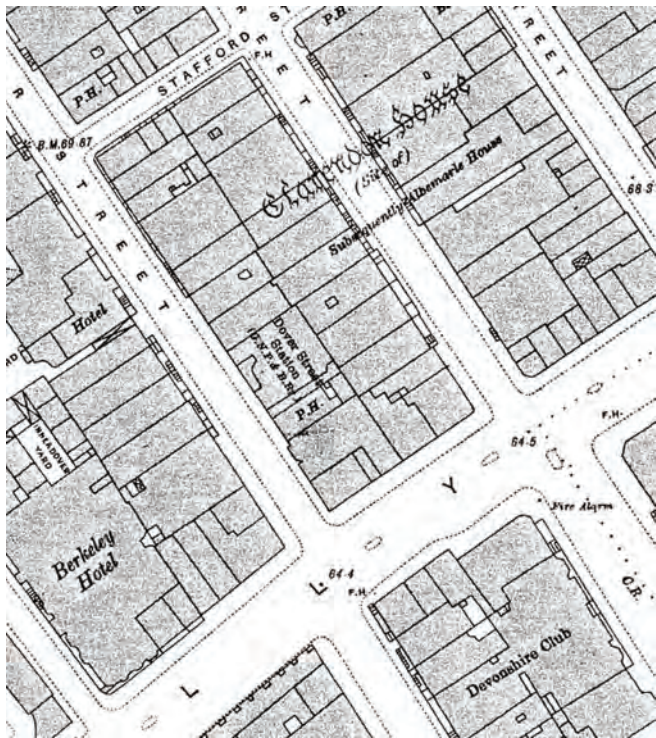
When it opened on 15 December 1906 the line was not finished, but was opened early to take advantage of Christmas traffic. Three stations did not open until early 1907. The GNP&BR's line served 22 stations and ran for 8.8 miles between its western terminus at Hammersmith and its northern terminus at Finsbury Park, with a short branch from Holborn to the Strand (later Aldwych).



The need to house the lift machinery in an accessible position dictated the layout of the street-level buildings. The architect Leslie Green devised a standard layout for the station buildings on this section of tube which became



Dover Street station entrance in 1911



1912 1,2500 OS map shows Dover Street station hidden away from busy Piccadilly

the UERL house-style. This consisted of two-storey steel-framed buildings faced with red glazed terracotta blocks, with wide semi-circular windows on the upper floor. With two exceptions, the stations with platforms in tube tunnels were provided with between two and four lifts and an emergency spiral staircase in a separate shaft. At the end of 1930, a bill was announced in Parliament for the formation of the London Passenger Transport Board which came into existence on 1 July 1933. From this date GNP&BR (which by now was being extended at both ends from Hammersmith to Uxbridge using the former District Line, and from Finsbury Park to Cockfosters) was known as the Piccadilly Line.

Original entrances at Dover Street and Hyde Park Corner stations are closed

Dover Street is one of the stations that didn't initially open with the rest of the line but had opened by March 1907. It was inconveniently sited in a side street away from public view off busy Piccadilly and in 1933 the station above platform level was rebuilt to a design by Charles Holden with escalators replacing the lifts. A new sub-surface ticket hall was built under Piccadilly with new entrances on the corner of Piccadilly and Stratton Street and on the south side of Piccadilly. The station name was changed at this time to Green Park.



Hyde Park Corner station opened on 15 December 1906 with its entrance a short distance along Knightsbridge from Hyde Park Corner. The need to house the lift machinery in an accessible position dictated the layout of the street-level building. Architect Leslie Green adapted his standard design to suit the shape of the Hyde Park site. The large ground floor housed the ticket office, staff accommodation and the upper lift landings, whilst the mezzanine floor, which housed the lift motors and winding and control gear, had large glazed arches. The ticket hall was originally tiled in green up to shoulder height, with white tiles above, and the ticket office windows had moulded tile surrounds in the Art Nouveau style.

In connection with the extension of the Piccadilly line in the 1930s, Hyde Park Corner was also rebuilt to a design by Charles Holden. This included a new sub-surface ticket hall at the eastern end of Knightsbridge and two escalators flanking a fixed stair. When this came into use on 23 May 1932 the existing lift-served building was closed with the original spiral staircase being retained for emergency egress only.



Hyde Park Corner station entrance in 1925

Down Street station was between Hyde Park Corner and Dover Street but it was never able to attract sufficient customers to make it viable. This was partly because of its location out of sight from Piccadilly but also because of the close proximity of Hyde Park Corner and Dover Street (exacerbated by the relocated station entrances of the latter stations). It was sited in a prosperous part of Mayfair where many potential customers already had their own transport. With the rebuilding of Dover Street (now Green Park) and Hyde Park Corner, Down Street closed on 21 May 1932.

New use for Dover Street during WWII

On 30 June 1938, as war with Germany approached, London Transport granted the government a licence for 'emergency storage of articles' at Dover Street/Green Park from the London Museum (Lancaster House). With the outbreak of war however, a new reuse emerged and the abandoned section of the station was earmarked for the Prime Minister's use. Floor space of about 50ft square

was available and plans were drawn up in October 1940 for Winston Churchill's bedroom, bathroom/toilet, a private office, a secretary's office and a conference room.



In December this location was abandoned in favour of Down Street, after which London Transport decided to fit out the same area to accommodate their Chairman, six Heads of Department and their personal staffs, about 25 people in all. These facilities were to be used if the main LT Headquarters Building at 55 Broadway had to be evacuated. Similar emergency offices for the three Operating Managers and their staffs were built on the disused Aldwych branch platform at Holborn, whilst the Engineering headquarters had already been moved to South Kensington. All three locations were conveniently accessible from one another using the Piccadilly line.

By the end of July 1941 the work was almost complete and ready for occupation, with access available from Green Park station as well as via the original entrance in Dover Street. The telephone switchboard provided for this emergency headquarters had connections to the main RL automatic telephone system of London Transport, to Scotland Yard and to the Railway Executive Committee headquarters now using the closed Down Street station. A single passageway at the Dover Street entrance to the station was also used for storing valuables of the London Museum.



The first section of the 'out' subway at Dover Street has been converted into a mess room for the Green Park station cleaners. It may be this part of the subway that was used to accommodate the LT Chairman and his six Heads of Department during WWII. This is the first room in the subway looking towards the lift landing. Photo Nick Catford

The street level building at 5 – 7 Dover Street was demolished in 1968 and the site is now occupied by an office block. A single vertical line of Leslie Green's red terracotta blocks is still in place at the south end of the building; they are now painted black and barely

recognisable (ten years ago they were still unpainted). There appear to be further blocks at the north end. Aerial views show a ventilation shaft at the rear of the building.

Visit in 2014 – first Dover Street.....

On the morning of our visit, I met up with Sub Brit member Nick Brown at Green Park station. When our guide arrived, we were told it was going to be a whistle-stop tour as he had to attend a meeting later that morning. This gave us a mere thirty minutes to look at both stations! We hurried down towards the Piccadilly line platforms. The entrance to the old subway is on an intermediate level near the stairs up from the Piccadilly line platforms where there is a junction for passengers interchanging onto the Jubilee and Victoria lines. An unmarked wooden door let us into the subway which comprises two parallel tunnels leading to the 'in' and 'out' side of the lower lift landing. The first section of one of the subways has been converted into a mess and rest room for the station cleaners. It may be that this is the section of the subway that was used by the personnel from 55 Broadway during the war.



The 'out' subway at Dover Street looking towards the trains. The original subway tiles with the unique colour theme are still in good condition in much of the subway. In the distance on the right an original sign can be seen above the upper tile line indicating 'TO THE LIFTS'. Photo Nick Catford

The subway here is divided into three rooms with open access between them. The first room has tables and chairs, the second room is a small kitchen and the third contains staff lockers. At the end of the third room we went through another wooden door and found ourselves back in the subway. It is well lit throughout and much of the original station tiling is still in place although some if it is hidden behind new electrical installations and cables and a huge quantity of maintenance materials that are stored (or dumped?) along one side of both subways.



Each station on the original line had a unique colour theme and pattern along the full length of its platforms. This theme is partially carried through onto the station subways. At Dover Street/Green Park the subways are tiled in white with blue horizontal and occasional vertical bands. After about 50 yards the subway turns to the right to approach the double-sided (in and out) lower lift landing. The two lift openings still displaying their moulded surrounds and that for the emergency stairs (now capped) can still be seen although now somewhat cluttered by cables.



One of the original signs on the 'in' side on the lower lift landing. Photo Nick Catford

One of the lift shafts now houses a ventilation fan with modern electrical cabinets lining the subway in front of the lifts. Close to the lift landing, one original sign remains above the shoulder-height tiling line indicating 'TO THE TRAINS', with two directional arrows. Another survives at the bend on the out subway indicating 'TO THE LIFTS'. We returned along the second subway which opens directly onto the intermediate landing above the Piccadilly line.

...then on to Hyde Park Corner

We had spent twenty minutes at Dover Street/Green Park which left us ten minutes to catch a train to Hyde Park Corner (only one stop now that Down Street is closed) and visit the disused entrance subway. At Hyde Park Corner the original entrance frontage designed by Leslie Green survives at 11 Knightsbridge.

Until June 2010 the building was used as pizza restaurant *Pizza on the Park*, but since 14 December 2012 it has been the entrance to the Wellesley Hotel. Only the station frontage survives; behind that the building was demolished during the construction of the hotel (where the cheapest room is £550 and a shot of 18th-century cognac at the bar is priced at £4,000!). Hyde Park Corner is now one of the few stations which have no



The original Leslie Green frontage at Hyde Park Corner station has been incorporated into the Wellesley Hotel. A wooden door under the canopy on the left is the emergency egress route from the station. Photo Nick Catford

associated buildings above ground, the station being fully underground. The current entrance to the station is accessed from within the pedestrian underpass system around the vast Hyde Park Corner road junction.

We made our way quickly to the Wellesley Hotel where we were immediately confronted by an irate doorman, complaining that we had passed the wrong side of guests' cars parked in front of the hotel, to reach a wooden door on the left side of the building. It was pointed out that



The top of the emergency stairs. The stairs have been replaced but the distinctive wall tiling which is unique to Hyde Park Corner remains in good condition.

Photo Nick Catford

TfL still has a right of access and we could still hear him protesting as we closed the door behind us.

We made our way down a short flight of stairs to the basement of the building and the top of the former emergency staircase. The steps have, at some time, been replaced as this is still a designated emergency egress route, but the distinctive tiling pattern can still be seen in the shaft and the subway below. The base colours at Hyde Park Corner are white and cream with yellow and brown bands and patterning.



At the bottom of the stairs, we reached the lower lift-landing which, unlike at Dover Street, is only single-sided with one subway leading to the platforms. This is unusual as all other Yerkes-designed stations had two subways, one for each direction of passenger flow. It can only be assumed that Hyde Park Corner was expected to have low traffic potential allowing this simpler layout to be used. Once again the old lift shafts have been retained for ventilation purposes. Recent aerial photos clearly show a ventilation shaft at the rear of the hotel.

The lower lift landing is in good condition with the three openings still displaying their decorated mouldings. The landing is unusually clean and tidy, free from any clutter and without the grimy coating of brake-lining dust usually found at closed stations. It would appear that the walls are washed and the subway is swept regularly. From the landing, the subway crosses the westbound platform tunnel on a bridge which is visible from the platform to a flight of stairs leading to a short central cross passage between the two platforms. We exited the subway and our TfL guide made a speedy getaway by train to his meeting.



The subway bridge is seen crossing the westbound Piccadilly Line platform at Hyde Park Corner.

Photo Steve Gale

While most disused underground stations are still out of bounds with little hope of arranging visits, the London Transport Museum at Covent Garden has resumed public tours of Aldwych station and is in the process of adding tours of Down Street, the disused parts of Charing Cross station, and the Clapham South deep shelter, so things are gradually improving.

SOURCES:

Emmerson, Andrew & Tony Beard, *London's Secret Tubes*, Capital Transport 2004 – some text copied with permission.

Badsey Ellis, Antony, *London's Lost Tube Schemes*, Capital Transport 2005.

Wikipedia – some text copied under creative commons licence.

Subterranea Britannica

Autumn Meeting 2015

Saturday 10 October, commencing at 10.00am

Royal School of Mines, London SW7 2BP

There will be the usual mix of interesting illustrated talks, including

Simon Jones on the La Boisselle “Glory Hole” Project,

Chris Rayner on Britain’s wartime underground air-raid shelters,

Robert Hulse on Brunel’s Tunnel,

Tim Whittle on the UK’s Oil Pipeline and Storage System incl. Pluto,

along with Members’ contributions and a chance to

meet and mingle with fellow enthusiasts.

A Flyer with more information is enclosed with this issue of *Subterranea*

To book, please use the website, where the latest programme (including any changes) will also be shown.

Please put the date in your diary now!



Fan Bay Deep Shelter Opening

Martin Dixon

Subterranea issue 38 included details of the special Sub Brit visit to the deep shelter at Fan Bay artillery battery near Dover. Under the inspirational leadership of National Trust Project Manager (and Sub Brit member) Jon Barker, a small army of volunteers with occasional professional help has been working hard to restore the tunnels and open them to the public.



Invited guests gather at Fan Bay prior to the opening ceremony. Some are dressed for going underground, others are dressed for dinner. Photo Emma Scheck

On 11 July the day finally arrived for the official opening of the tunnels. Since the Sub Brit visit, further clearance has taken place including the reopening of a second tunnel exit out of the cliff face adjacent to the second and earlier sound mirror. Most impressively, the sub-surface plant room adjacent to the main entrance stairs has been re-capped, re-covered and re-decorated as a site for a generator, and visitor briefing and helmet/light room.

Around 120 invited guests – mostly the volunteers who have worked so hard on site – attended the opening on what was (luckily!) a glorious summer's day. The invitation suggested 'Black Tie' as a dress code and this was taken literally by some and as inspiration by others with bow ties appearing with boiler suits as well as tuxedos. The walk to the tunnels from the National Trust visitor centre takes about 40 minutes and the hordes of normal visitors were mystified to pass a steady stream of smartly dressed attendees, topped off by helmets and lights!

The Mayor of Dover, Councillor Chris Precious cuts the ribbon, Jon Barker stands nearby. Photo from National Trust



A siren sounds an Air-raid warning across the white cliffs. Photo from National Trust

The entrance is now in a fenced compound but a display board (including acknowledgement of Sub Brit's grant aid) informs passersby of what lies beneath.

Once the group had assembled, Jon said a few words and volunteer Gordon Wise gave a potted history of the site. The Mayor of Dover then formally cut the ribbon and the fun began. A number of Sub Brit members were part of the volunteer restoration team and also played their part in the opening. John Smiles had brought along his World War II air-raid siren which (somewhat inconveniently) requires a three-phase power supply. But fear not! Fellow member Nigel Ostler-Harris brought his along and the two then combined to ensure that the first 'official' descent was accompanied by a long and extremely loud air-raid warning.





The interpretation board at the entrance to the shelter recognises Sub Brit's involvement in the restoration project. Photo from National Trust

Drinks were served underground and volunteers and dignitaries alike explored the complex, many of the former showing off their work to others. The site has been deliberately left with minimal interpretation and lighting which allows visitors to get much more of a feel of the space. A couple more speeches by National Trust managers were well received and Jon was given a well-deserved rousing three cheers by the attendees. Returning to the surface, we negotiated the cliff path back to



The party start to descend into the shelter. Photo from National Trust

the visitor centre where a hog roast and music had been set up. Special permission had been given for camping so the site had overnight residents for the first time since the army left in the 1950s.

Just over a week later on 20 July the tunnels opened to visitors. BBC Breakfast TV broadcast live from within the tunnels and there was extensive media coverage elsewhere. The part played by volunteers was stressed in the coverage – congratulations to all involved in this visionary and successful project. A limited number of tickets for tours can be booked online but others are released on the day at the visitor centre. Tours are £10 per person but free for National Trust members.



Within weeks of the shelter open it is proving a popular community asset and is seen here hosting a drawing workshop at the end of July. Photo Sebastian Edge

Subterranea Britannica Hamburg Weekend 15 – 18 May 2015

Martin Dixon



The easterly of the two bores of the Old Elbe Tunnel. This is nearing the end of a long restoration and we were fortunate to be granted permission to visit the works. The effort that has been taken to remove, restore and replace the original tiling is particularly impressive

Hamburg is a fascinating international city, being Germany's busiest port and having a Russian submarine, an English lightship, and the world's largest model railway amongst its attractions. All of these and more would feature on Sub Brit's recent study weekend but there is a darker side to Hamburg. In World War II, more people died during the Allied air raids on the city than across the entire United Kingdom and approaching 70% of the city was destroyed. Many residents owed their survival to the network of approximately 1,400 air-raid shelters and bunkers (see panel) and it was these that would form a major part of the Sub Brit weekend of subterranean exploration.

Recce Weekend

Linda, Tony Radstone and I arranged the trip and during our 'recce' weekend were lucky to be able to visit a

couple of extra sites that we couldn't fit into the weekend proper. Firstly we descended beneath Altona station into the Altona Harbour railway tunnel, known locally as the *Schellfischtunnel* ('Haddock' tunnel). This linked the large mainline Altona station with the dockside of the Elbe fishing port. The tunnel was completed in 1876 to replace an earlier inclined plane and the majority of the freight carried was fish, hence its nickname. Built on a slight curve, the tunnel was originally 395 metres long and was extended to 961 metres when the mainline station moved in 1895.

Inside the tunnel the track is still in place and there are a variety of tunnel lining materials. When the S-Bahn (lines S1 and S3) was extended to Altona in the 1970s, the Haddock tunnel was used for construction access and the remains of the construction shaft are still clearly



visible and the sound of passing trains could easily be heard. The line closed to traffic in 1992 but some of the tunnel was strengthened some years after this as it was deemed cheaper to do this rather than infill to maintain its structural strength. The tunnel has been opened for public visits during European heritage weekends in September for a number of years.

We also gained access to the roof of the Flak Tower at Heiligengeistfeld (literally Holy Ghost Field) a short distance from our hotel at St Pauli. There is a local plan to redevelop the roof of this huge structure to form a community garden and coincidentally there was an open day to show residents the plans. We tagged along and despite not understanding a word of the tour had a great exploration of the roof and its splendid views over the city.



The Flak Tower at Heiligengeistfeld a few hundred metres from our hotel. It can be seen that windows have been inserted post-war to allow for re-use which was apparently part of the original plan

But the main purpose of our advance trip was to select sites for the programme, to locate a hotel and restaurants and to meet representatives of two local organisations that share our interests. We spent time together with Jens Dahm of Hamburger Unterwelten and Ronald Rossig of Unter Hamburg. Both organisations have access to a number of sites and we plotted out possible sites and routes that would be workable for a large group. We couldn't have managed the weekend without them and Jens and Ronald and members of their societies helped shepherd and guide us round their city which was much appreciated.

The weekend begins

Hamburg is well served by air services from across the UK and attendees arrived throughout the preceding days. One of the most notable arrivals was Nigel Headley who on arrival at the hotel realised he had picked up the wrong case at the airport. On looking through the contents he found it belonged to fellow Sub Brit member John Poole who arrived a few minutes later – blissfully unaware that he too had collected the wrong bag! With such a propitious start, the weekend was in good shape.

German Air-Raid Shelters (*Luftschutzhaus* or later, *Luftschutzbunkers*)

In the build-up to World War II, Germany built a large number of air-raid shelters. Three considerations were taken into account when locating the shelters:

- * The size of the local population
- * The strategic importance of the location
- * The distance/ease of reach for Allied bombers.

Hamburg scored highly on all three counts so it is no surprise to see the huge number of bunkers in and around central Hamburg.

Quite a number of early shelters comprised strengthened cellars, which were often linked together underground to provide alternative exits in the case of collapsed buildings. Signs were painted on the walls of the buildings above ground to indicate the location of the shelters and to aid rescuers after an air raid.

Purpose-built structures were also constructed, with a wide range of styles and sizes. The earliest generation of shelters were round concrete-built structures with conical roofs. The buildings had carved stone door lintels, brick facing to the walls and even the roofs were elegantly tiled. They were known as *Zombeck luftschutzturms* (air-raid towers) after their designer Paul Zombeck. They were often built near to railway stations where they were expected to be most useful. Each bunker was designed to hold around 500 people and many still exist.

A second common type of shelter was the so-called *Rohen* (crude or basic) shelter which was essentially an arched shaped underground tube accommodating 50 people. Multiple tubes were linked together to increase capacity, sometimes to several hundred. These shelters were typically built in residential areas where the houses were not equipped with cellars. One such shelter is open as a museum in the Hamburg suburb of Hamm.

As the war progressed, more and more massive shelters were built. Initially some large bunkers were built with individual rooms providing private space for each family. Later structures dispensed with this and had shared accommodation. These larger structures were either above ground and known as *Hochbunkers* (high bunkers) or buried underground when they became *Tiefbunkers* (deep bunkers). *Hochbunkers* had several standard designs both rectangular and circular in plan. The circular construction added strength but complicated internal furnishings and fittings.

The largest shelters built were those beneath the later gargantuan *Flakturms* (anti-aircraft towers) which were designed to hold perhaps 15,000 people and sometimes housed many more than this towards the end of the war.

Most members took the S-Bahn and U-Bahn to arrive at the hotel so a few words on these rail networks is appropriate. Hamburg's U-Bahn or Underground Railway is something of a misnomer as large parts of the network are, in fact, overground at a high level in much the same way as the elevated railways of Chicago or New York (or at one time Liverpool). The first stretch of what was originally known as the Hoch und Untergrundbahn (High and Underground Railway) was opened in 1912 and formed a circle line (now the yellow U3). Expansion took place throughout the 20th century and today the network extends to 105 kilometres with 4 lines and 91 stations.

The S-Bahn system is a fast suburban railway system ('Schnellbahn') which operates as part of the state railway (Deutsche Bahn). The network is a member of the Hamburg Transport Association (HVV) and ticketing and exchange with other means of public transport is seamless. The rapid transport rail system started operation in 1907 although the S-Bahn designation was only used from the mid 1930s onward (having been first used in Berlin in 1930). Its operations now cover 147 kilometres and serve a total of 68 stations.

Of interest to Sub Britters, some of the track and ten of the stations are underground. These include five within Hamburg itself (Königstrasse, Reeperbahn, Landungsbrücken, Stadthausbrücke, and Jungfernstieg), Altona, three within the southern suburb of Harburg (opened in 1983/4) and the new Airport station of 2008. In the Cold War, some of the underground stations were fitted with blast doors that could be dropped down in an emergency to provide secure emergency shelters. One such is at Reeperbahn, just a short walk from our hotel; the doors are still visible today and many attendees took the opportunity to visit under their own steam.

Under the Elbe

To make the visits less crowded, we split into smaller groups for many of the sites; our first visit on Saturday morning was to the Old Elbe Tunnel (*Alter Elbtunnel*). Hamburg is located on the River Elbe, 65 miles upstream from the North Sea; the city's docks are situated to the south of the river and much of the residential area is to the north. By the beginning of the 20th century the number of workers needing to cross Hamburg Harbour was growing fast. The ferries then in use were overcrowded, impeded other port traffic and were affected by foggy conditions. As a result, construction of the Elbe Tunnel commenced in 1907. The tunnel connects St Pauli in the north with Steinwerder on the south bank.



The imposing Landungsbrücken (literally Landing stages) of the main ferry terminal in Hamburg. The separate domed building on the right hand side is the northern entrance to the Old Elbe Tunnel

Construction took place in a pressurised chamber to help prevent the inflow of water as was common engineering practice. However decompression sickness affected many of the construction workers and it is believed that there were three deaths amongst the 4,000 plus workers. Opened on 7 September 1911, the tunnel is 426 metres in length and consists of two separate bores, each 24 metres below ground level. We had arranged a special guided tour and were met by Mr Salam of the Hamburg Port Authority on the north bank.



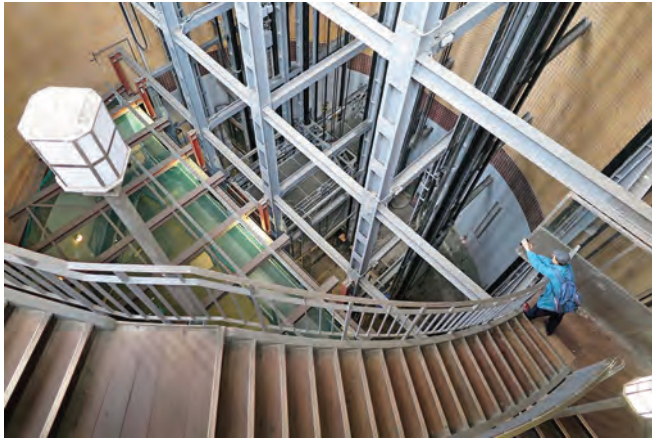
Our guide Mr Salam operating one of the four Old Elbe Tunnel vehicle lifts

Going Up!

Paradoxically, we started our underground weekend by climbing several flights of stairs to the top of the entrance building. Positioned just under a marvellous dome, we had a bird's eye view of the north shaft. We were told the history of the tunnel including the fact that the first person to officially travel through on completion was its architect, after his marriage. Descending to tunnel level, we were struck by the similarity of the staircase to that at Brunel's grand entrance shaft at Rotherhithe, where Sub Brit held its 40th party last year. The whole tunnel is



exuberantly lined in terracotta tiles and those around the north shaft included plaques illustrating the construction of the tunnel.



A view of the northern shaft of the Old Elbe Tunnel. Tim Wellburn takes a shot of the four massive vehicle lifts that are still in daily operation

A unique feature of the tunnel is that cars enter and leave by four vast lifts on each side of the river. Although cars are prohibited at weekends, we were accorded a privileged ride in one of the vehicle lifts which are in fine condition. One of the bores of the tunnel (there are two) is currently under restoration and we were able to visit the work in progress. The original tiles are all being removed and replaced giving us a fine view both of the normally hidden linings and a preview of what promises to be a superbly restored finish.

Setting out under the river, the tunnel boasts frequent fine terracotta reliefs along the route. Most of these are of fish and other shellfish but others include a rather unexpected boot with rats around it! As we reached the south entrance shaft, we were delighted to hear that we had been granted permission to visit the machine room. Winding gear and drums for the six lifts (four vehicle and two passenger) was in superb condition. We could see and appreciate the original centrifugal-regulator braking mechanism.



The massive cable drums and winding gear for the vehicle lifts in the southern Old Elbe Tunnel shaft. The equipment is meticulously maintained including the traditional governors in the foreground

After exiting the tunnel we had a short visit to the private museum on the south bank which had many original engineering drawings and artefacts. We had time to appreciate the view back across the river at Hamburg's skyline before it was time to retrace our steps. The tunnel seemed familiar to some who had never visited Hamburg but this is probably because it featured in the *Odessa File* film of 1974. Attendees at recent European weekends in Gothenburg and Prague will recall our visits coincided with those city's marathons. It's a good job we didn't continue the trend as there is a Hamburg marathon run entirely underground in the Elbe Tunnel – 48 laps by 280 runners!

Steintorwall Bunker

Heading off towards Central Station ((Hauptbahnhof or Hbf), we entered the Steintorwall bunker. Constructed by cut-and-cover during World War II and completed in 1943, this three-level bunker lies just outside the main station and is around 140 metres in length. It was built to accommodate 2,700 shelterers. Postwar it was impractical to demolish the bunker due to its proximity to the train station. It served briefly as a budget hotel but in the mid-1960s it was adapted for use as a nuclear bunker by the West German Civil Defence organisation. Five million Deutschmarks were spent on its conversion and its 150 rooms are a fascinating record of the tensions and technology of this period.

We entered down a staircase and squeezed through a surprisingly narrow gap. At floor level between two movable barriers was a pressure pad that recorded a count of those entering. Once 100 had entered, the barriers would have been hydraulically closed and remain so until those entering had successfully negotiated the air-locked blast doors beyond. These blast doors were our next port of call and turned out to be hydraulically operated.

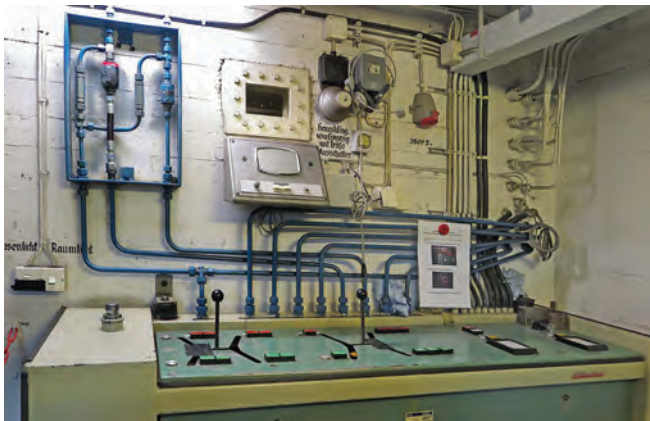
Opening and closing of the doors is controlled from a secure control post with an H-shaped control gate that prevents both sets of doors being open simultaneously. The control post has a thick but tiny glass portal but the doors themselves can only be viewed through an angled mirror set in the air lock. The doors have been restored to full working condition and we lapped up the remote closing which concluded with a satisfying thud. All in all, it seems a costly installation for doors that would only have been operated on one occasion.

Fasten your seat belts

Passing through the blast doors, the exceptional state of preservation of the bunker was immediately obvious. Ranks of seats filled most of the public space. Each seat had a rather incongruous train-style luggage rack and even had individual seat belts. Whether these were to protect against the shock of nuclear blast waves or to prevent people who fell asleep from falling out wasn't at all clear! We were told that the Cold War plan was for those inside to stay underground for two weeks. Sixteen



The restored and fully-operational hydraulically-operated blast doors at Steintorwall Bunker. In the centre of the far wall can be seen the small window which connects to the control room. The placard is an invitation to keep fingers clear



The control room for the blast doors at Steintorwall Bunker. The 'H' shaped gates at the bottom are interlocking devices to ensure that only one set of doors could be opened at the same time to maintain integrity of the shelter

hours out of 24 would be spent sitting with the remaining eight spent in one of the adjacent dormitories. Our host Jens showed some slides of the construction of the bunker and summarised its history which helped place the weekend's visits in context.

A more comprehensive tour of the bunker then commenced. The dormitories had three-tier bunks and reduced lighting. The bed linen was the same as supplied to German railways (DB). Toilets were flush but there were no showers at all – not even for decontamination purposes. The toilet cubicles had curtains instead of doors. This was to discourage suicides as it was felt a semi-open space would discourage those so minded. Similarly the mirrors in the toilets were polished steel so that they could not be broken to provide glass shards.

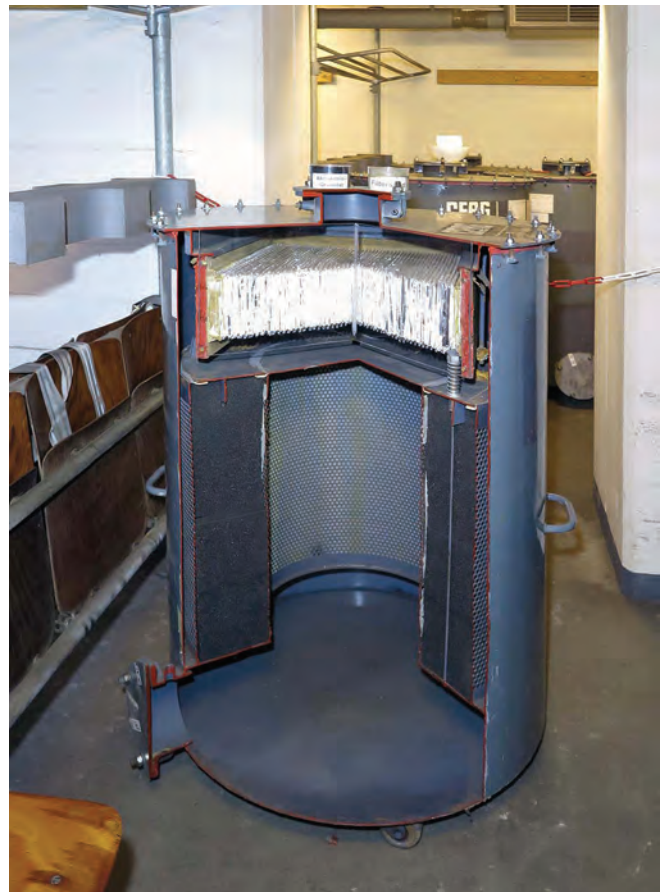
Vital Services

The vital services for the bunker came next. On the surface above the bunker was a multi-purpose concrete column. From the top down this provided:

- * a base for the radio aerial
- * the outlet for the diesel generator exhaust
- * inlet point for diesel fuel
- * emergency sewage ejection point if the normal sewers became blocked

In addition, water was supplied from an artesian well around 160 metres deep – hopefully well below any possible contamination.

We visited the ventilation plant which had an emergency hand-cranked backup and an assortment of filter banks. These started with large hoppers of sand which would reduce the temperature of the air as well as removing large particles. The (ex marine) diesel generator sat nearby with enough fuel for at least four



Filtration drum exposed for display purposes at Steintorwall Bunker. On the left-hand side can be seen seats with seat belts and head rests for the occupants

weeks continuous running. One of the most surprising features was the tiny kitchen with just four domestic hot plates. We were told that dried rations would have been served along with soup from cauldrons that were no longer in place. Even so, providing hot drinks for over a thousand people would have been a significant challenge if not impossible.



Dormitory accommodation at Steintorwall Bunker, complete with German Railways (DB) branded sheets



Cold War generator at Steintorwall Bunker which remains in excellent condition

Leaving the bunker, we had time for a quick lunch break in one of the many food outlets in the central station. Before long we were diving back underground to the U-Bahn at Hauptbahnhof Nord. There, on the U2/U4 lines, Ronald showed us two complete disused platforms. These had been constructed in anticipation of a northbound line extension that never came to fruition. Securely fenced off, we could nevertheless see period adverts from the late 1960s on the platforms where trains have never run. We however took the eastbound service for just one stop and alighted at Berliner Tor.

Crossing on foot over the S-Bahn line where track maintenance was underway, we entered a rough patch of land with some graffitied surface structures. These were the only visible signs of the fascinating Berliner Tor shelter. We descended down one of the stairways into what turned out to be a three-level *Tiefbunker* which has a circular plan of around 20 metres diameter. It is unusual for underground bunkers to be circular but this is believed to be due to the limited space available in the small park it occupies.

Operation Gomorrah

The bunker was originally constructed in 1940, located near the Berliner Tor station for civilian use. With walls



Graffitied entrance stairs and ventilation shaft of the Berliner Tor shelter. A second entrance can just be seen in the left middle distance.

A Cold War-era aerial tops the ventilation shaft two metres thick, its basement lies 11 metres below the surface. During Operation *Gomorrah*, Allied bombing raids on Hamburg created a firestorm that killed perhaps 30,000 people in a single night. The centre of the firestorm was only a few hundred metres from Berliner Tor and the bunker saved the lives of up to 800 people. We saw photographs of the neighbourhood above after the raid that matched those of Hiroshima for the total destruction. But although the concrete walls of the structure dated from World War II, everything else was updated in the early 1960s. At the beginning of the Cold War, a programme began for the construction of nuclear-proof bunkers for the population of Hamburg. The Berliner Tor bunker holds the distinction of being the first such example – in many ways an experiment – and was completed in July 1963. The fittings of the bunker are remarkably intact and so began our fascinating tour.



Descending into the three-level Berliner Tor bunker. Luminous paint which parallels the handrails some distance above can just be made out

Like Steintorwall, Berliner Tor has extensive seating for those sheltering. Because of the experimental nature of the structure, these are in three different designs so that the options could be evaluated. These include chairs of woven plastic string as well as wooden versions. Also

unusual are the wedge-shaped bunks which are custom-made to make best use of the circular walls of the bunker. Both the chairs and the bunks are locked in place by pressure rather than screwed to the walls or ceiling. Near the entrance are two decontamination showers.



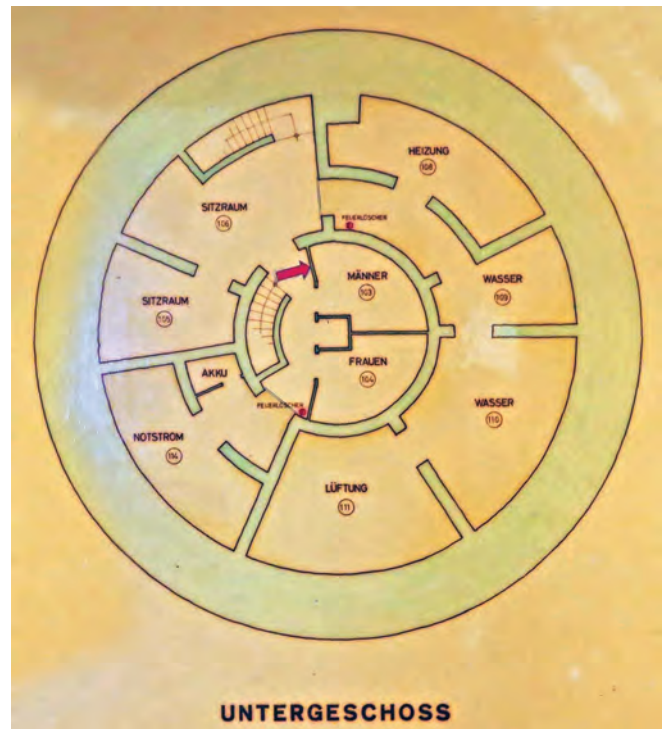
Dormitory within the Berliner Tor bunker. The three-level bunks are packed into the available space but it can be seen are jammed rather than firmly fixed into the structure to minimise the effect of blast

Glowing in the Dark

The dormitory lighting was coloured blue as (we were told) the human eyelid is least sensitive to blue and so it was easier to sleep. Like the previous site, we saw toilets with curtain screening and a tiny kitchen area. As is traditional in German Cold War sites, we switched the lights off and admired the fluorescent paint glowing and indulged ourselves in a little light painting. The kitchen also had an original WWII cartoon – the German humour was a little incomprehensible to us but apparently it was part of a series that were dotted around to amuse children. Plant and machinery were on the lowest floor to gain maximum blast protection. From a technical perspective, there was a 90 HP generator that powered the air-conditioning and lights. Around 21,000 litres of diesel were stored which should have kept things going for a few weeks. There was also a 24 volt supply for telephones and (a joke, we think) the doorbell! An artesian well for water and a sewage ejector pump which we heard operating dealt with liquids in and out.



The 90HP generator within the Berliner Tor bunker



Plan of the lowest floor at Berliner Tor. Services and plant rooms are labelled including Wasser (Water), Notstrom (Emergency Power), Akku (Batteries), Lüftung (Ventilation), and Heizung (Heater). Male and Female toilets are in the central core

A second ‘trial’ Cold War Bunker was built above ground in Dortmund and here triallists were paid so that researchers could evaluate the usability of the building. Volunteers were paid 50 Deutsch Marks a day for a week’s trial with a 150 DM bonus if they lasted the full week. At 1963 exchange rates, this was about £50, or around £1,000 in today’s money, allowing for inflation. In a war situation, the only ‘employed’ resident of the bunker would have been a *Bunkerward* (Bunker Warden) who would have been distinguished by a white helmet, boiler suit, and a white gas mask (though the filter was a standard army green). The assumption was that those sheltering would have represented a sufficient cross-section of society to include other skilled workers. For these, armbands were provided including (in English translation) Orderly, Nurse and Social Worker.

Law and Order

The Bunker Warden himself would have maintained order within the shelter; to this end he carried a trenching tool which would have been used to quieten any disorderly residents. When we questioned whether this was indeed true, we were asked to suggest what other uses a trenching tool had in a building constructed of two-metre-thick concrete walls! Other equipment we saw included glass vials (similar to breathalyser kits) used to test the incoming air for poisons. The vials were labelled for example with *Zyanid* (Cyanide) or *Arsen* (Arsenic). See-through body bags were also in evidence, one explanation being that it had been found the transparent version did not degrade as quickly when exposed to sunlight.

The relevance for bags stored and used underground seemed a little tenuous. Being able to handle the artefacts and having their significance explained by our knowledgeable guide Ronald made an interesting visit fascinating.

Emerging from the bunker, we had to blink to ensure we weren't seeing things. But no, there really was a Junkers JU-52 plane flying at a couple of thousand feet above our heads. This particular plane was built in 1936 and was repurchased by Lufthansa in 1984. Lovingly restored, 'Iron Annie' as she is known is now owned by a charitable foundation that offers regular flights to enthusiasts. Returning underground, we took the U-Bahn back to St Pauli and our final site of the day.

A Chilling Cellar

We arrived at a fine 19th-century building which had been built by a butcher named Koopmann. The building was on the site of a 17th-century plague hospital and for many years it was assumed that its cellars dated from this period and they became known as the *Pestkeller* (Plague cellar). The truth however is rather more prosaic: the cellar was actually built as an icehouse in the 1860s.

The butcher actively traded with Denmark and England – apparently buying pigs from the Danish, processing them into sausages and similar and selling the products to England. Entering through a maze of surface rooms we found ourselves in the large cellar with two different patterns of vaulting. Modifications to the structure since construction include changes in the floor level and insertion of skylights in the vault. Original plans seem to show that the walls were double-skinned with a layer of air between to improve insulation. The remains of large hinges suggest that massive doors once sealed the subterranean vault.



*The extensive ice cellar (or Pestkeller) we visited.
The two methods of vaulting can be made out*

We could also see the remains of a later-inserted smoker with its chimney breast, but the building's use in World War II was arguably more chilling than its days as an ice house. For the butcher's shop above had become the Headquarters of the local Nazi Party; we were shown photographs complete with party slogans and swastikas. No one can be sure but it is believed that political prisoners were held in the cellars before interrogation or worse.



The wartime Nazi Headquarters which occupied the butcher's shop above the ice cellar we visited makes a chilling comparison with the present-day bar that now occupies the building

From Humber to Hamburg!

After a short break we reconvened for our evening meal. Not exactly underground but technically underwater. We had booked a private room in an old Lightship that is now moored alongside in the harbour. Built in Dartmouth in 1952, the ship served as Trinity House Light Vessel no 13 in the Humber Estuary until taken out of service in 1988. Not having engines, she was towed to Hamburg in 1991 and remains there as a fine example of its type.



*Trinity Light Vessel no 13, originally moored off the Humber estuary but now a restaurant and bar, where we had our group meal on Saturday evening.
The origin of the British phone box is unclear*



*Sub Brit at play in the plant room of the Light Vessel.
Not exactly an engine room as the ship didn't have any means of propulsion!*



We enjoyed a buffet meal with ample liquid refreshment surrounded by brass, teak and mahogany. Our colleagues from Hamburger Unterwelten and Unter Hamburg joined us and the relaxed format allowed people to mix and mingle reflecting on an excellent day and anticipating tomorrow. Many had a final nightcap in the hotel bar but the early start meant some regretted it the next day!

Eidelstedter Weg Bunker

During World War II Hamburg held shipyards, oil refineries, factories and submarine pens as well as the docks themselves, so becoming a key target for Allied bombardment. 394 U-boats were built in Hamburg as well as much larger ships including the *Bismarck*. In response to this, Germany built air-raid shelters that would accommodate around 47% of the population. Records show that many shelters were overcrowded so it is likely that a much higher percentage of the population could take refuge.

Most of the shelters were underground but our first site on Sunday was to a *hochbunker* (literally high bunker), one of 80 built above ground. This four-storey bunker was built in 1941 to provide air-raid protection for the surrounding housing district. The area of town where it is located is too close to the water table to accommodate cellars and hence the need for an overground structure. Many of the *hochbunkers* have been demolished; of those that remain some were converted to civilian use and others were remodelled for use in the Cold War. This *hochbunker* was used postwar by a publisher but despite this has remained in exceptional condition.



The daunting facade of the Eidelstedter Weg bunker, softened with Virginia Creeper which is reminiscent of Brislington bunker near Bristol. The gantry and loading doors were added postwar when the structure was used as a warehouse. Photo Adrian Armishaw

We travelled again by U-Bahn and on arrival we were met not only by Jens and his team but also by a TV crew from RTL who were filming us for a news item. Sadly despite it having listed building status, the bunker is under threat of demolition to provide space for a children's playground. The crew stayed with us for around half

the day and took a particular interest in Andy Catford (captioned in the broadcast as 'Bunker Tourist'). This was for good reason as Andy's (and Nick's) father was a tail-gunner in Lancasters in the RAF and completed over 60 operational missions including participating in Operation *Gomorra*.



The Sub Brit party being greeted by Jens Dahm outside Eidelstedter bunker. The film crew from the RTL news programme is also in attendance

Family accommodation

Entering the bunker we found a design very unlike other WWII structures in that it was built as a 'bunker house' with individual rooms off a central spine corridor for each family. It bore some similarity to the 'Mother and Child' bunkers that we have visited on Sub Brit visits to Berlin. Originally bunks for 625 occupants and seating for a further 132 were provided. We were told that in the lead-up to World War II the propaganda likened the threat of air raids to that of a heavy rainstorm and so the concept of taking shelter was built into the everyday mindset of the population.

One of the shelter's most interesting survivals are the original wall paintings on the first and second floors. These depict street scenes, landscapes and various tradesmen and are in superb condition. Also in working order is the original ventilation system which appears far more sophisticated than that in later bunkers.



One of the fine hand-painted murals in the Eidelstedter Weg bunker. They show real people and scenes – this is believed to be a famous actor at the stage door



Ventilation equipment within Eidelstedter Weg. The emergency hand-cranking handle can be seen on the left-hand side

Hamburger Unterwelten have been guiding groups round the site for a number of years and the top floor of the bunker includes a small exhibition area. Some of the WWII photos show scenes of almost unimaginable destruction and desolation. Postwar, the building was used as emergency accommodation for returning residents and as a warehouse for blankets and other essentials.

Kaufmann Bunker

A short bus ride and walk led us to the smallest but best protected of the weekend's sites – the so-called Kaufmann Bunker. Karl Kaufmann was born in 1900 and from 1933 to 1945 was the Nazi Gauleiter (party leader) and Reichsstatthalter (Regional Governor) of Hamburg, with power over 1.8 million people. In 1937 Kaufmann commandeered the Budge Palace to act as his residence and headquarters. The building, dating from 1884, was luxurious, with fine rooms and even with had its own theatre and bowling alley.

To offer protection during air raids, a headquarters' bunker was constructed below the grounds of the palace. Finished in 1940 it consists of two structures with vaulted ceilings; there is also a remarkable surface structure (in German *zerschellschicht*, or 'shattering layer'), intended to deflect and minimise the impact of bombs. In concept this is very similar to the modern-day slat or cage armour that surrounds modern armoured vehicles. The Budge Palace is now a music academy but the bunker (now listed) remains a rare example of a headquarters bunker.



Karl Kaufmann, the Gauleiter of Hamburg. Born in 1900, he was imprisoned for war crimes but released in 1953 and survived until 1969



The unusual zerschellschicht (deflection or literally 'shattering' layer) of the Kaufmann command Bunker

The bunker footprint is approximately 22 metres by 14 metres with a height of 5.2 metres. When built, the walls of the bunker were 2.5 metres thick though this was increased to a remarkable 4 metres in 1943. We entered the bunker via gas-tight doors into a lobby which would have been occupied by despatch riders and messengers. Inside the bunker proper are just nine rooms including a large command room, support staff accommodation, telephone exchange, generator room, and toilet. Junior staff would have been summoned to collect messages via an indicator light system but would otherwise have not been allowed access to the discussions taking place. The atrocities planned and perpetrated by discussions within the bunker do not bear thinking about.



Original ventilation, filtration and other equipment in the Kaufmann Bunker

Central heating was provided by radiators fed from the adjacent palace. Water was obtained from a 50-metre deep artesian well. The Junkers diesel generator is still in place and in an excellent state of preservation; its single cylinder operation was reported to have been so jerky that unless properly secured the engine was likely to 'pogo' around the room. The best protected small room was not for weapons but for the telephone exchange – the importance of secure communications being well-recognised. There is some evidence of coloured wall paintings although these are believed to date from the immediate postwar period when the Bunker was used as an Officers' Club by the occupying Allied forces.

Although smaller and sub-surface rather than deep underground, the bunker is arguably one of the closest surviving structures in feel to Berlin's Führerbunker. Local group Unter Hamburg run occasional tours of the site and we are indebted to them for helping preserve the site, arranging our access and guiding the visit.

Flak Towers

Our final site as a group was the immense *Flak* (anti-aircraft) tower in the southern suburb of Wilhelmsburg. The *Flaktürme* (Flak Towers) were eight groups of immense blockhouses built in the centre of German cities in World War II to act as platforms for large calibre anti-aircraft guns. The towers were built in Berlin (3), Vienna (3) and Hamburg (2). Each site had a larger tower (known as 'G' or Combat) which housed the actual guns and a single control tower ('L' or Directing). The latter provided a headquarters and housed the radar equipment which automatically directed the anti-aircraft guns.

The first-generation towers were 70 metres square and around 40 metres high with main armament of eight (four twin) 128mm guns – one in each corner of the roof. The second-generation towers had a slightly smaller footprint (57 metres square) but had around the same height and armament. The towers also acted as civilian shelters for up to 15,000 people. Hamburg had examples of both generations of towers – the earlier one near our hotel at Heiligengeistfeld was viewed by many attendees and the later version in the harbour district of Wilhelmsburg. Attendees of the Sub Brit Berlin weekend will recall visiting the destroyed Flak tower there, now surrounded by demolition rubble forming a large hill so the entrance is from the top level.

In 1947 an attempt was made by British Engineers to demolish the Wilhelmsburg tower but although the internal floors were largely destroyed, the tower continued standing. Locals are alleged to have chanted 'Made in Germany' when the structure still stood after the demolition charges! It stayed like this for 60 years and



The massive and brutal outline of the Wilhelmsburg Flak Tower. The metal slats are solar panels and part of the recent refit. Mostly refaced, areas of the bunker's walls have been left in original condition

in 2007 the idea of converting it to an 'energy bunker' or green power station was suggested. 27 million Euros later, the bunker produces power from solar panels, bio-gas, woodchips and waste industrial heat. As a consequence most of the interior of the Flak tower is now full of generating equipment on new concrete floors but the emergency exit passes through some original concrete.

Roof-top view

The outside of the tower is however still largely original and proclaims its massive presence on the neighbourhood. We were met by Lydia who gave us a special tour of the roof area and showed us a superb album of photos of the site during wartime. As well as sheltering thousands of locals, the shelter was also used to accommodate the Harburg Hospital whose own buildings were destroyed. We also heard how survivors of the war recall labourers and others being refused access to the building as bombs fell around them.



On the roof of Wilhelmsburg Flak Tower in one of the original gun emplacements. The modern struts support a solar panel array.

The immense top slab is around 3.5 metres thick

The shelter was used for a recorded 884 hours during air-raids and some locals took up residence if their own homes had been destroyed. The scale of construction and amount of raw materials (concrete and iron reinforcement) used is difficult to take in – the top slab of the roof is around 3.5 metres thick of concrete reinforced with 50 kilos of iron per cubic metre. The construction only took around a year. However the damage caused to bombers by the heavy armaments is believed to be minimal and the collateral damage to German property was probably larger.

We were joined by Fred Cyranka – Unter Hamburg's oldest member aged 84 who has lived in Hamburg all of his life. From atop the Flak Tower Fred pointed out the approach path of the Allied bombing raids from the south-west that he had witnessed. He also had two fascinating British propaganda leaflets that he had personally picked up in 1943. One of these headed *Die Festung Europa hat kein Dach* ('Fortress Europe has no Roof') gave figures showing the massive increase in Allied bombs dropped

on Germany and encouraged the readers to unseat their leadership and leave cities. Fred was 14 when the war ended and just escaped conscription into the Hitler Youth. Thomas Hughes, the youngest Sub Brit attendee on the weekend, is also 14 and this along with the wartime photographs of young conscripts manning the Flak Tower brought home the horrors that war brought to all ages.

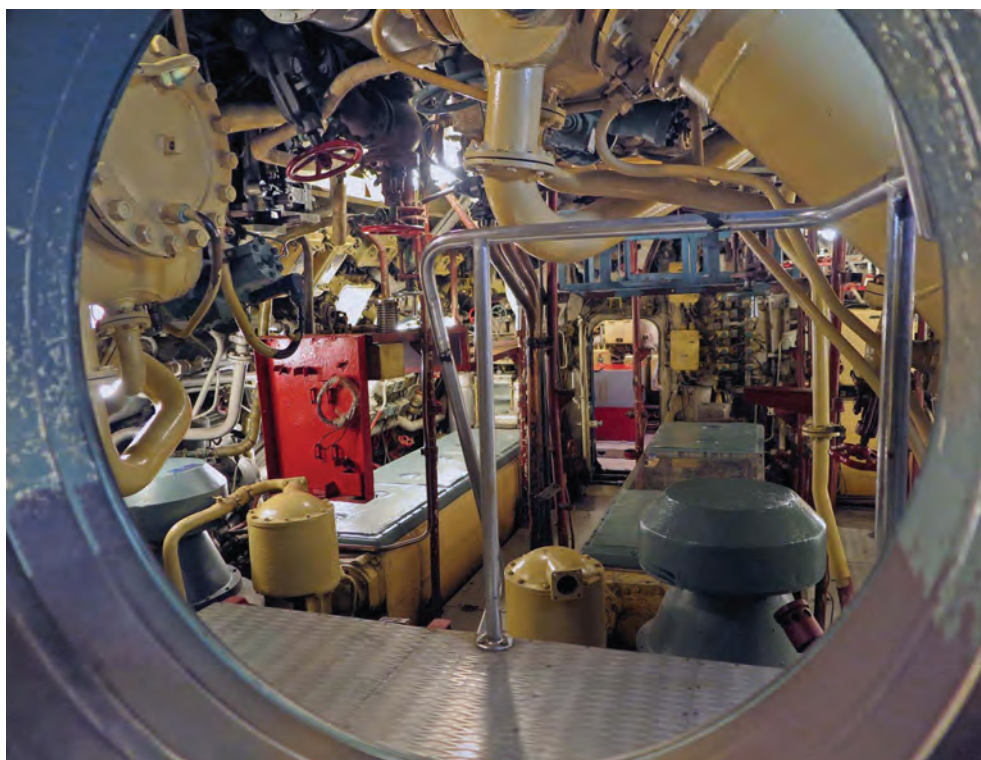
Free Time

This ended the formal programme apart from a pleasant evening in a local Bier Keller where we sampled traditional south German beer and north German fare.



An iron ore mine at Miniatur Wunderland. Modelled on the LKAB mine in Kiruna, Sweden, the vehicles all have working lights including indicators and brake lights! Photo Martin Dixon

Most members took the opportunity to visit the unparalleled Miniatur Wunderland which is the world's largest model railway layout. It also features a number of underground scenes including U-Bahns, mines, and even the Channel Tunnel. The attraction is arguably worth a trip to Hamburg in its own right and heartily recommended.



The cramped conditions within submarine U-434



Soviet Tango class submarine U-434. Retired in 2002, this is now moored alongside as a tourist attraction

Near to our hotel was St Michaels Lutheran Church which has a magnificent crypt beneath it. The crypt was also used as an air-raid shelter during World War and was an interesting add-on at 4 Euros. Also nearby was Submarine U-434, a long-distance Soviet Tango class vessel retired in 2002 and now berthed off St Pauli Fischmarkt and open as a museum. Slightly further afield and visible from harbour ferries are the Fink II Submarine Pens. Most of the evidence of these heavily protected submarine pens has disappeared but a small part of the Fink II pens can be glimpsed underneath the extension of the Airbus factory runway.

Conclusion

The Spanish philosopher George Santayana said "those who forget history are destined to repeat it". Although the number of people with first-hand memories of World War II is rapidly declining, many of the structures we visited over the weekend tell their own part in the war's history. I hope that their continued preservation can be secured to act as a reminder of the folly of those who start wars, the suffering of those who take part and the bravery of those who finish them.

With grateful thanks to Jens Dahm (Hamburger Unterwelten), Ronald Rossig (Unter Hamburg) and their colleagues for all their help with site selection, access arrangements and superb guiding over the weekend.

All colour photos by Clive Penfold unless stated.



Pinetree

Sub Brit Trip Report – WWII & Cold War Bunker at Daws Hill, High Wycombe

Rob Jacobs and Martin Dixon



Local author Sean Kelly, who attended school on the Daws Hill base, talks to the VIP Party before going underground. Included in the audience are (Left to Right) the Mayor of High Wycombe Councillor Mohammed Hanif, John Hadfield of the 8th Air Force Historical Society, Dominic Barnes Deputy Leader Wycombe District Council, Councillor Ian McEnnis Chairman Wycombe District Council and Adam Mathias of the Stars and Stripes newspaper

On Friday 17 July 2015 a group of Sub Brit members were delighted to have the opportunity to visit the bunker at the former RAF Daws Hill. This visit was the culmination of years of hard work and persistence from several Sub Brit members to make it finally happen. RAF Daws Hill was, in reality, a United States base for its sixty years or so of active service. From the first months of the USA's involvement in World War II to the dying days of the Cold War, it served as a secure, subterranean, secret command centre for the US Air Force. If only walls had ears....

Background

The history of the site was written up in *Subterranea* 9 in December 2005. This edition of *Subterranea* is one of the few of which we unfortunately have no stock remaining. As we have had many hundreds of new members since then – none of whom will have had the chance to read this edition – we make no apology for summarising once more the site's history from Nick Catford's article.

The USA entered World War II in December 1941 after the Japanese attack on Pearl Harbor. In anticipation of the entry of the US Air Force into the European Theatre,



the RAF sought a location for the headquarters of their Bomber Command. A site close to the existing RAF Bomber Command at Walters Ash (five miles north of High Wycombe) was preferred, and on 28 March 1942 the entire site of Wycombe Abbey Girls School was requisitioned. The school was located on a hillside just to the south of High Wycombe, and two weeks later the site was vacated.

No sooner had the girls left the school than the US Eighth Air Force moved in to make it their European headquarters that became known as Station 101. About three-quarters of the way up the hill a new underground headquarters codenamed 'Pinetree' was built in only eleven months at a cost of £250,000.

The bunker had a floor area of 23,000 sq ft with a 10 ft-thick reinforced concrete roof and above that a further 25 feet of soil. The side walls were over 5ft thick and to absorb the shock wave from an explosion the building was surrounded by an inner void and then a further 6ft of reinforced concrete; in effect it was a bunker within a bunker.



On 11 May 1945 King George VI and Queen Elizabeth visited the bunker at Daws Hill. The King is seen behind the Queen speaking to General James H Doolittle. This is the 'wartime' entrance to the bunker. It's now the emergency exit and equipment entrance.

The hub of the headquarters was the communications centre with direct links to the 8th Air Force Fighter Squadron (at Bushey Hall), Bomber Group Operations Rooms and the Bomber and Fighter Command HQ. The bunker continued to serve as the command centre for the 8th Air Force Bomber Command until the end of World War II.

By the middle of 1946, most of the Americans had vacated the site and a fence was built between the school

and the remaining military camp at the top of the hill; this included the bunker which sat in a peninsula of land in the northwest corner of the camp. At this stage it is understood that the bunker was no longer in use.



Cold War threats

In 1950, with the threat of attack from the Soviet Union, it became evident that the US Air Force would need to utilize sites in the UK. The Air Ministry still wanted to retain the overall camp including the bunker but the school refused to sell the land, and in December 1950 the school signed a 21-year lease prompted by a request from the US Strategic Air Command (SAC) to reoccupy the wartime command centre for its UK-based 7th Air Division; this was established on the site in May 1952 as the 3929th Air Base Squadron. On 10 September of the same year 'USAF Site, Wycombe Abbey' was officially opened as a satellite of the 3911th Air Base Ground Group at RAF West Drayton.



Following a more robust request from the Air Ministry in 1954 they purchased the land that was to become RAF Daws Hill from the school; however, this did not include the land the bunker was situated on and a 56-year lease was signed with

the school to retain the bunker site. With the withdrawal of the 7th Air Division from four of its East Anglian bases by 1959, the US Strategic Air Command concentrated in Oxfordshire making High Wycombe the natural choice for their new central headquarters; this took place on 1 July 1959.

A new construction phase followed with the addition of over seventy new buildings with the station acting as the Strategic Air Command's UK headquarters during the build-up to the Cuban missile crisis. The SAC and Bomber Command acted as one combined unit for all practical purposes.

In 1965 the advent of mid-air refuelling for bombers made the B-47 force redundant and US forces in the UK were drastically reduced. The US government was now able to provide a high level of defence direct from bases in the United States, and in June 1965 the 7th Air Division at High Wycombe was deactivated with the base being transferred to the US 3rd Air Force and the United States Air Forces in Europe.

The 7563rd Air Base Squadron arrived at Daws Hill as part of the US defence of the London area and remained there until January 1971. By 1969 the bunker was no longer in use and by 1976 it was stripped out and almost empty.



Cruise Missiles arrive in the UK

The big defence spending plans of the Reagan administration in the 1980s called for a USAF Wartime HQ for Europe. In April 1984, the Daws Hill base was occupied by the 7520th Air Base Squadron, under the control of the Third Air Force HQ at RAF Mildenhall.

A major refurbishment of the bunker took place, much of the cost being to strengthen the building, to help proof it against nuclear, biological or chemical (NBC) attack. At least \$33 million was to be spent on electronic equipment. The contract to rebuild the bunker was awarded to Sir Alfred McAlpine with an expected cost of \$13 million.



The entrance to High Wycombe Air Station (Daws Hill) in 1982

Between 1986 and 1989 when it became fully operational the bunker was completely rebuilt but not extended in operational area. The main extension was for a new plant room and life support systems including air filtration. The previously empty void between the two bunker structures was used for machinery and equipment. A decontamination area – the ‘dirty entrance’ – was added at the main entrance which had remained externally little altered from WWII days. Large concrete baffles were placed over the three ventilation shafts.



One of the computer equipment rooms fitted out in the 1980s, but, like many of the rooms in the bunker, now stripped bare. Photo Nick Catford

The two-level gallery and operations room was floored over and rooms full of computer equipment replaced the manual plotters of WWII. The site became USAFE (US Air Force Europe) European Theatre of War HQ. A central programming facility for European-based cruise missiles was planned for but never completed due to the sudden phasing out of that system. It is understood that the task was undertaken within the RAF Daws Hill base but that it took place in one of the main base above-ground buildings and never moved into the bunker.

Communications links went to all airfields and operational HQs in USAFE as well as to the Strategic Air Command (SAC) Headquarters bunker at Offutt Air Force Base in Nebraska. The main communications hub of USAF in the UK at Croughton (also an international Autodin [data transfer] centre) was also directly linked as was RAF Strike Command Tactical Control Centre at RAF High Wycombe. Another major link connected Pirmasens in Germany – the Autodin centre for the German Theatre area.

By 1992 there were 225 American military staff and 116 defence department employees working at Daws Hill when the base’s strength was reduced again with the post-Cold War rundown in USAFE facilities. The base was deactivated in May 1993 and handed over to the Commander of US Navy Activities UK for use as a vehicle maintenance and warehouse facility. The US Navy had no use for the bunker which was mothballed and retained on care and maintenance. Its only military use in latter years was for US Marine Corps CQB (Close Quarter Battle) and hostage-rescue training.



Filter room created in the void between the inner and outer shell of the bunker during the 1980s refit.

Photo Nick Catford

Veterans’ Recollections

There is a fascinating account from S/Sgt Prentis Ollis (USAF Headquarters 7th Air Division SAC) taken from

Sean C. Kelly's book *Home Bases* that describes his experiences in the bunker from 1953 to 1956. Here is a brief excerpt.

“The facility at High Wycombe was underground; this place was the Command Post for the US 8th Air Force in World War II and was known as ‘Pinetree’. Our modern Cold War name for it would be ‘Lancer Control’. This facility contained about 40 rooms and it was three stories tall – all underground. I don’t recall the number of steps down to the main operations level, but it took a little time to get down there; however, it took longer to climb out of there! We arrived to start opening up the place and found there was about ten feet of standing water that had to be pumped out. It took about a year to get all of the equipment installed and operating, but then we were open and operating 24 hours a day, seven days a week.

We had some of the best communications facilities available at that time. We had High Frequency Radio contact to just about any place on earth. Our telephones were remarkable for that time in history. We could pick up the phone and ask for any place in the world and be connected almost immediately. There were huge plotting boards covered with world maps, with all types of intelligence information plotted. These plotting boards were about 20-25 feet high and 30-40 feet long. There were ladders attached to a rail mounted to the ceiling, where they could be moved from position to position. I recall a very interesting map of the Soviet Union and they were building a railroad to the east across Siberia. Every few days someone would come in and mark the number of cross-ties [Ed: UK sleepers] that had been laid in the last 24 – 36 hours.”



*Chute for disposing of contaminated clothing in the decontamination area.
Photo Clive Penfold*

In researching the site, I was lucky enough to make contact with another US Veteran, Bob Muir. Bob served in the bunker from 1962 to 1964 and recounted the following from his time there:

“I was with the 485th Communication Squadron, 7th Air Division Headquarters at HWAS. I worked as a radio operator at the start of my tour there, and had voice contact with the SAC airborne command post (“Looking Glass”) when it flew over our UK area.

My job in the bunker was as a Technical Controller, which maintained the teletype (tty) and landline circuits for the SAC bomber bases in the UK (Brize Norton, Greenham Common, Fairford, Upper Heyford etc). If I remember correctly, we were on the 2nd level and looked out on a large room with teletype machines and tty operators. They would call in when having trouble with a tty circuit and we would reroute the circuit or have the machine repaired. There was also a reel-to-reel data room as well as a telephone switchboard. Quite primitive by today’s standards. The Command situation room was on the upper level I think.

I was on duty the day President Kennedy was shot. I remember the order wire alarm bells going off with the urgent messages. The Cuban missile crisis also occurred during my time at HWAS. It was an exciting but tension-filled time for a young guy first time away from home.”

Recent Times

Back in 2011, having calculated the various lease lengths that the bunker had been on lease to the MoD from Wycombe Abbey School, I calculated that in 2012 the bunker would be due to be either handed back to the school or to have the lease renewed on it. Having read all the media coverage about the development of the main RAF Daws Hill base, I assumed that upon this lease expiry the bunker and the compound it is sited within would finally be handed back to the school.



*The main entrance to the Daws Hill bunker.
The ‘dirty’ entrance is on the right.
The ‘yellow’ building was codenamed ‘Sierra 2’
and was a fortified blockhouse for the security police.
Photo Clive Penfold*



I first wrote to the (then) Defence Estates back in 2011 to see if a visit to the bunker would be possible but was met with a flat response of “No!” Not one to take no for an answer, I continued to write to the Defence Estates to which they continued to respond with ever more creative ways of saying no.

Later in 2012, I learnt that a prior notification for the demolition of the entire surface features of the bunker had been submitted to the local planning office by the MoD. A number of people raised issues around this and as a result English Heritage got involved and visited and assessed the site. Thankfully sense prevailed, and in October 2013 the bunker and its associated surface structures were awarded a Grade II* listing protecting this important historical site from what would have been its inevitable demise.

As well as all the underground features, the ventilation towers and the Cold War-era decontamination suite were included in the listing. The reasons given are in the adjacent panel. An additional listing (this time at Grade II) was also made to cover the surface generator building, also dating from the Cold War period. This unusual feature is only on the surface as the power required within the bunker during its latter years demanded a size of back-up generator that wouldn't fit within the profile of the original bunker. An underground Ice House within the school grounds is also listed Grade II but that, as they say, is another storey!

Back to School

Following its designation, the bunker was handed back to the school. In the period of a few months over the summer of 2013, just before the bunker was handed back, the main blast doors to the bunker were locked open. This, coupled with a water leak in the top-floor



Hydraulically operated trap door and hoist near the emergency exit. This allowed equipment to be lowered to the levels below. Photo Nick Catford

English Heritage – RAF Daws Hill Listing Criteria

The underground bunker, constructed 1942, including the four attached 1980s external vents and decontamination unit, formerly within RAF Daws Hill and now within the grounds of Wycombe Abbey School, is listed at Grade II* for the following principal reasons:

- * Structural interest: one of the largest purpose-built WWII British bunkers, of unique form in a British context, comprising a double-skinned subterranean cuboid structure built into the side of a hill, formed of an inner bunker laid out on three levels contained by a full-height void and outer bunker skin;
- * Historic interest: high-level US headquarters serving as the nerve-centre of United States Army Air Force European bombing campaign in WWII, refurbished as the main command centre of United States Air Force 7th Air Division in the 1950s and as the United States European Command wartime headquarters in the 1980s;
- * Intactness: WWII structure, retaining evidence of its continued use and adaptation during the Cold War in response to military strategy and particularly to increasing military threat over five decades;
- * Supplementary protection: in line with NATO policy, subsequently hardened against nuclear, biological and chemical warfare, creating a Faraday cage; exceptionally intact and resonant Cold War decontamination unit.

electrical filter room, led to significant damp and mould damage throughout the bunker. This was a source of great frustration to the school as they would prefer to have a bunker with potential reuse rather than a rotting relic.

As soon as the school took back possession of the site and the bunker, I visited the site and we located the leak. Shortly afterwards the school maintenance staff fixed the leak and sealed the bunker preventing any further deterioration. Since this time the bunker has dried out significantly and hasn't deteriorated further, but there is still evidence of damage caused during this period. In 2015 the school fitted a new power supply into a room on the top floor of the bunker and is considering fitting out power and dehumidification to the whole of the top floor.

Please Sir

As soon as the bunker was back in school hands, I approached the school authorities about arranging a visit for members of Subterranea Britannica. Other members

also made approaches, with myself and Martin Dixon being most persistent and persuasive.

As some of you will be aware, in the early days of the handing back of the bunker to the school the structure was broken into numerous times by ‘urban explorers’. In reaction to this the school invested a significant amount of time, effort and money into securing the bunker and deterring future break-ins. After this the school were rather cautious about allowing anyone access to the bunker and we had to work hard to build a relationship of trust to persuade them to allow us a visit. Following years of back and forth contact with the school, the Estates Bursar and the Headmistress finally agreed to a visit for Sub Brit.

Located as it is in the grounds of a prestigious girls’ school, our visit had to be outside term-time in the interests of child protection. In order to gain approval for the visit, Linda and Martin Dixon put together a method statement describing the parameters of the visit. The proposal was to have a familiarisation day for six guides who would then host the actual visit.

In order to maximise attendance, the plan showed six separate tours, each of twelve members – a total of 78 members including the guides. It was a significant milestone for us to be the first group that were allowed a visit so we were keen to agree a number of visitors with the school that we felt would be manageable and at the same time a group size that ensured all attendees could easily see the bunker’s features. We knew that organising the day to show we are competent and reliable would maximise the chances of being able to arrange further visits.

A Curved Ball!

Having got formal approval we then got agreement from six members – some local and some from our Committee – to act as guides. We arranged to meet four days before the main visit in order to familiarise ourselves with the layout of the site, agree parking and visitor check-in facilities, draw up a suitable tour route, and to agree emergency procedures. All was looking good until the school bowled us something of a curved ball.



*Railed trolley for lowering equipment into the bunker. The trolley ran on rails that straddled the emergency stairs.
Photo Nick Catford*

In what was in effect a great vote of confidence in Sub Brit, the school asked us to run an additional tour for local VIPs. In conjunction with local author Sean Kelly, an American who went to school on the base, twenty local dignitaries, veterans and media had been invited. Keen to support the school, publicize Sub Brit and to make others aware of its importance, we of course agreed but this introduced a few complexities.

Firstly, we had planned on having up to two tours underground at once and with a leader and back marker on each this meant that six guides would have been fine. The only way we could add the ‘VIP’ tour was to interleaf it with the planned trips and thus we needed an extra three helpers – one more guide and a mid and back marker for the group of twenty. Luckily we found willing volunteers and ended up with nine people to turn from ‘novice’ to ‘know it all’ in an afternoon! Unlike Sub Brit, the extra party wouldn’t be equipped for exploring underground space so we also had to arrange torches and helmets for the group.

Familiarisation and Rehearsal

On Monday 13 July the guiding team all met up at Daws Hill and were able at last to see the site for ourselves. We had good plans of each level, not as straightforward as it might seem as the bunker is built into the hillside and each floor has a smaller footprint than the one beneath it. To complicate things, one of the plans was printed in the reverse orientation to the other two for some reason, which took some time to get our heads round.



The emergency exit and equipment winch. The rails for the equipment trolley are seen. Photo Rob Jacobs

We spent some time as a group agreeing the tour route. We were lucky in that the emergency exit would be open and we could operate a ‘through route’ – extremely helpful when we would have over fifty people underground in three separate groups at times. The lead guides took notes of some of the key features and Linda marked up plans that we would copy and share.

We then spent time on the surface agreeing how we would manage car parking, check-in, and any emergencies that we hoped wouldn’t occur. Before the site was locked up



for the night, we had a chance to retrace the route of the tour again, ensuring as much as possible that it wouldn't be a case of the blind leading the blind.

All of the above was quickly packaged into the draft joining instructions that I had prepared and these were emailed out to attendees on the Tuesday. Sadly at this stage around ten percent of booked attendees told us they couldn't make the trip. Tony Radstone worked hard to ensure that the stand-by lists were worked through and we ended up with a full house as we hoped. All we could now do was wait till Friday and hope that the weather gods shone on us.



Photo Rob Jacobs

D(aws)-Day Dawns

Friday 17 July dawned and the weather was perfect. The first tour wasn't till 1000 but most of the helpers were on site by 0830 to put up signage, check the bunker route, lay out the check-in desk and packs and so on and so forth. The school had gone out of its way to help us – as well as a large table for check-in they had provided shelter if needed for adverse weather, toilet facilities, an urn of hot water and even a minibus for the day.

The latter meant we could shuttle members to and from the main school entrance or car park. Arriving members were entertained to see the minibus branded "Subterranea Britannica" and some wondered if it had been a recent Sub Brit investment; in fact the signs were magnetic but certainly looked the part!

As the time reached 0930 the first group started arriving and was able to leave a little before 1000, under the guidance of Chris Kenney who as a local resident had driven longingly past the site thousands of times. Each of the guides followed the same general route and pointed out many different features along the way. At this stage our pre-planning was paying off as the twenty VIPs were also arriving with Mayoral chains making a strange juxtaposition with boiler suits and hard hats!

Martin Dixon, one of the tour guides, describes the route that visitors were taken through:

"Starting on the surface, the secure compound with outward-facing lights and tremble alarms on the fences

could be seen. Across the entrance ramp was the listed generator building – unusual to be separate for reasons stated earlier. The filler points for the diesel supply are clearly visible though the greatest threat the building currently faces is from the school beehives on its roof!



The listed generator building. Photo Clive Penfold

Nearby is one of the massive ventilation towers which lead deep underground into the plant area. Finally there is an external guardroom, built during the 1980s as an additional security precaution. This was the era of the cruise missiles and, just like Greenham Common, Daws Hill had its own peace camp of disarmament protestors.

Going Underground

Venturing underground, the first sight was of the massive blast doors which would have protected the bunker. Adjacent to these were two sorts of blast valves – one circular and one rectangular – designed to prevent blast waves from penetrating inwards. There are two entrances, the 'clean' and the 'dirty'. The latter led through a decontamination suite in very good order, progressively through areas labelled as:

- * Blast Lock
- * Liquid Ingress
- * Vapor Ingress
- * Ingress Air Lock
- * Showers
- * Dressing Room

I believe the Liquid and Vapor Ingress areas are connected with surface cleansing – possibly including biological and chemical contamination.

At the end of the decontamination area is an entry intercom and a viewing window from the adjacent guard room. Entering the bunker proper, a flight of stairs with a dog-leg led down to the bottom floor of the three-storey bunker. Before entering the main structure, we were able to visit one of the fascinating aspects of the building.

The main bunker is clearly constructed within an outer shell – effectively a bunker within a bunker. Thus an outer wall of about five feet of reinforced concrete surrounds an air void of around ten feet width before the inner core with again about a five-foot width. Sub Brit members





The massive blast doors in the 'clean' entrance to the bunker. Photo Nick Catford

may have seen this 'bunker-within-a-bunker' architecture within Cold War structures in Germany and Sweden, but its use in a mid-World War II structure is particularly rare if not unique.



The air void between the inner and outer shell remained empty during WWII but in the 1980s refit it was a convenient space for all the new plant that was required. Photo Clive Penfold

We were able to make a complete circuit of this air void; possibly empty during WWII but used in the 1980s to house a large variety of plant and machinery. Multiple sewage tanks were followed by multiple non-potable water tanks. It seems that drinking water was held above ground near the generator building which seems

to be a crazy reversal of logic; there being no artesian well apparent. Through airtight 'knife edge' doors the void continued with air plant and ventilation equipment (dehumidifiers and filters) next. As we progressed further into the hillside the height of the void increased from one to two to three storeys – a consequence of the stepped construction of the bunker referred to earlier.

In the far corner of the void were a full-height steel ladder and a hoist that we would see the top of later in the tour. Round the final bend was a corridor of major power handling equipment with vast cables stretching here and there. These were needed for installation of the enormous 1980s mainframe computers used in the last stages of the bunker's operation. High above, enormous copper earthing strips made an impressive sight.

High Security

Having completed our circumnavigation of the bunker, we then entered the heart of the site. Starting on the bottom floor, the top-secret nature of the operations within was apparent as door after door was labelled 'Restricted Access TS (Top Secret) Clearance Required' or 'Restricted Area Level 6 Security Badge Required' and so on. Many of the rooms had raised floors and major ventilation for computing equipment, all now removed.



Photo Clive Penfold

Like at many US bases in the UK, all sockets were duplicated with UK 240V outlets doubled up alongside US 110V sockets. One area has a 208V supply which is 110V three-phase. A control panel for the plant within the void (sewage, air conditioning, power) is seriously impressive with pride of place on the console given over to an over-pressure indicator gauge.

The site had no dormitory or kitchen areas so in a lock-down situation conditions for those underground would have been quite primitive. There are however male and female toilets and these were of course inspected, as is customary. One of the personnel rooms adjacent to a large computer room had hooks for four clocks on the wall – labelled as Washington, Local and FRG (Federal Republic of Germany). The fourth label had

been removed – almost certainly (in the author’s view) having been for Moscow. What better souvenir for the last occupants?

Other traces remain, such as the extensive pipework for Halon fire extinguishant, early-era movement detectors, loudspeakers and enormous earthing boxes. One of the rooms and some of the outlets are labelled for ‘WWMCCS’ or the (US Army) World Wide Military Command and Control System. Pronounced ‘Wimex’, this system provided military warning, communications, data collection and processing, and executive decision-making tools. It lasted until the mid 1990s and it is understood that Daws Hill was one of the few sites outside the USA to receive regular updates to the War Plan that was an integral part of it.



A final steep flight of stairs took us up to the surface and out through the emergency exit. Note the trolley rails either side of the steps and the winch cable in the centre of the steps.

Photo Nick Catford



The electrical plant room on the top floor.

Despite the condensation damage on this floor visually everything here still appears to be in excellent condition.

Photo Clive Penfold

Going Up

Floor by floor, the tours slowly ascended the three floors. Two staircases exist, one accompanied by hydraulically operated trap doors through which equipment for inside the bunker could be hoisted. The trap doors seem to be part of the original WWII fit-out although they would have been ratchet and cable operated at this stage.

The exterior walls of the whole bunker are all lined in steel – installed in the 1980s and part of a huge Faraday Cage. This protected equipment against the EMP (Electro Magnetic Pulse) of a nuclear explosion which, along with

the blast wave and radioactive fallout, was the third of the main hazards of a nuclear explosion.

Those with a good sense of spatial awareness could envisage the ‘stepped’ nature of the three floors – as well as the evidence of the varying height of the void, the ceilings of rooms without accommodation levels above were also totally Faraday-screened. On the middle floor, it was possible with a bit of deduction to place the original two-storey WWII Operations Room. There is an area of ceiling where a distinct lip can be discerned and later infill conjectured. The Operations Room would have been the nerve centre of the 8th Air Force Bomber Command, with tote boards showing current and forecast weather, squadron readiness, operations progress and so on and so forth.

On the top floor of the complex there are several rooms where condensation has caused the collapse of ceiling tiles and some of the raised floors are showing signs of weakness after the recent leak. Thankfully this deterioration had stopped once the root cause was addressed but it shows how even a small period can cause rapid deterioration in a building. The top floor also houses an extensive electrical plant room, complete with filters and voltage regulation equipment.

Back to the present day

There are a few reminders of the final roles that the bunker fulfilled. Some of the walls have damage believed to have been inflicted by US Marines who used the site for CQB (Close Quarter Battle) training in the 1990s. Even more



mysterious are some strange runic symbols and strands of what appear to be cobwebs through part of the bunker. It turns out that these are from the Halloween parties authorised by the Base Commander after its operational closure.



Looking out from the emergency exit. This is also used for taking equipment in and out of the bunker on a trolley which travels on rails straddling the stairs.

Photo Clive Penfold

Soon it was time for the tours too to return to the present day and the exit used was the original emergency route which climbs up steep stairs from the top level of the bunker. A few original WWII wiring brackets can be seen, as can the top of the hoist over the void viewed at the start of the tour. The exit stairs are bracketed by an inclined railway which would have supported a cable-hauled wagon to take materials into and out of the bunker. The exit point is well above the entry level and so a gentle surface descent brought us back to the start of our journey.”

VIPs

Interleaved between the Sub Brit tours, the VIP tour was the same but different. The same in that the group enjoyed much the same route (skipping the equipment void) as Sub Brit members, but different in that more information was given on the history of the site and of bunkers in general. It was well attended by a wide range of people such as the Mayor of High Wycombe, the Chief Executive of Wycombe District Council, and the Honourable Rupert Carington (Deputy Lord Lieutenant of Buckinghamshire). Also present was Sean Kelly, the author of the book mentioned earlier.

Archie Tatum (who served in the bunker in the 1950s) and another couple of veterans attended, as did a number of others including the Bucks Free Press and a representative of the US *Stars and Stripes* magazine. Most of the locals had no idea that the bunker existed and were fascinated with what they heard and learnt. Martin Dixon, who led the VIP tour, said that the bunker stood as a memorial to those of the 8th Air Force whether they served above or below ground. The countless B-17 crews who lost their lives in World War II were counted out but not back from this historic structure.

Conclusion

The school is currently considering any potential commercial reuse of the bunker but has to consider the constraints of access to the site as the only means of getting to the bunker are through the grounds of the girls' school. One possibility is limited use as a film set as the bunker has recently been used as a location for an episode of *Midsomer Murders* and the finale of a yet to be aired series called 'Apocalypse Slough', starring Rob Lowe.

Overall the trip was a great success and most importantly we are already in discussions about planning future visits, subject to any potential reuse of the bunker by the school.

The Sub Brit members who visited on the day all did the group proud and the school too were very pleased with how things went. Most of all though, I would like to sincerely thank all of those from Sub Brit who contributed to the planning of the trip and the guiding on the day – Martin and Linda Dixon, Tony Radstone, Chris Rayner, Chris Kenney, Richard West, Tim Wellburn and Bob Templeman.

The support of the school – in particular the Headmistress Mrs Rhiannon Wilkinson and the Estates Bursar David Curtis-Donnelly and his staff – was also first rate and we hope this will be the start of a long productive relationship.



The VIP group is seen in one of the upper floor rooms damaged by condensation which caused many of the ceiling tiles to fall. Photo Rob Jacobs



Malta

Tourist Highlights - Sub Brit style

Mark Dalton



The 'Ops Room' in the Lascaris War Rooms in Valletta – now a museum

As I was heading off to sunny Malta for a family holiday I thought I'd try and squeeze in a few Sub Brit-friendly highlights. There's a lot to see on the island, so if you like underground structures (which you will as you are reading this), then I'd advise a trip.

In modern times the island has been largely known for its heroic survival during the last war despite the attentions of the Italian and German air forces between 1940 and 1943, when this small island (smaller than the Isle of Anglesey) was pounded with the equivalent of the Coventry Blitz, every day!

My interest is with WWII and postwar structures so this brief overview will only concern those. However, there is an abundance of other underground structures to explore and investigate, so definitely something for everyone.

War Museums

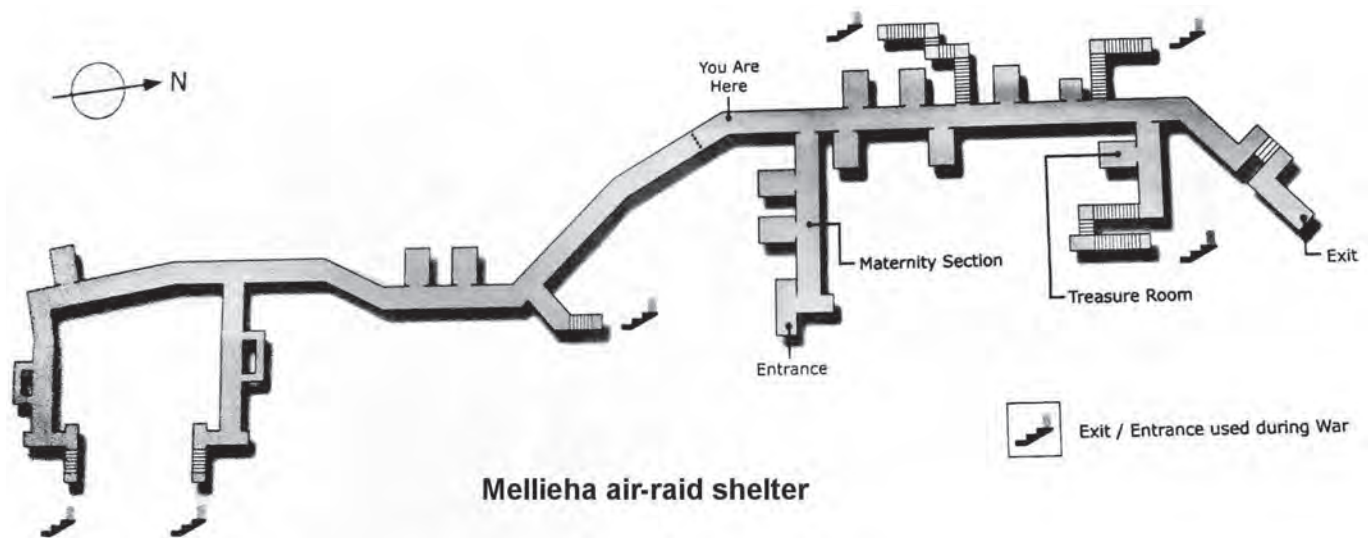
There are three public museums which deal with the war plus an aviation museum which covers the subject as well.

These are the National War Museum situated at Fort St Elmo in Valletta; the Malta at War Museum in Birgu and the Lascaris War Rooms, also in Valletta.

The Malta Aviation Museum is at the former RAF airfield at Ta' Qali, inland near the historic town of Mdina. This has little of underground interest although is worth viewing in its own right and you can also wander round the huts of the former RAF base which now house a crafts market.

Unfortunately, the National War Museum is currently closed for refurbishment so the chance to see the last remaining Gloster Gladiator *Faith*, of the famous triumvirate *Faith, Hope and Charity* – which were the only fighter aircraft available to defend the island when the Italians attacked in 1940 – was not to be. However, a wander around the outside of the museum allowed us to get close to a number of the WWII Battery Observation Post towers which would have been used to control the coastal defences.





Air-Raid Shelters



The Malta at War museum shelter. Photo Ben Roberts

The Malta at War Museum is housed in an 18th-century military barracks, built into the walls of Vittoriosa (Birgu). It is a relatively small affair with artefacts and information boards. Over the years, the building served various purposes including being the local police station, and a civil defence centre but the appeal for Sub Britters is the air-raid shelter network forty feet below the surface which can be found at the rear of the final gallery. Although small, this was well presented and included a chapel and wartime 'birthing room' which was the only room with an electricity supply. The information boards also explained a novel approach whereby regular shelter users could pay to dig their own private shelter room off the main corridors. The museum is open Tuesday – Sunday: 10:00 to 17:00.

A much larger shelter complex is also open to the public in Mellieha, at the north end of the island. It is one of the largest shelter complexes in Malta dug entirely by hand and reaching the length of over 500 metres. It contains a maternity ward and an area to store national treasures and private rooms to accommodate entire families. Unfortunately time restrictions meant we weren't able to venture inside. With such heavy wartime bombing there must be many more interesting shelters extant on



The birthing room. Photo Ben Roberts

the island. Mellieha Shelters are in Our Lady of Grotto Street and are open Monday to Saturday between 9.00 and 15.30.

Operation Husky

The most impressive site we visited was the Lascaris War Rooms in Valletta. This is where the air defence of the island was run from during the war and it was subsequently used to control Operation Husky, the invasion of Sicily in 1943. The complex is at the base level of St Peter and St Paul bastion, one of the large bastions which are prevalent in Malta and is approached off a tunnel that runs from the main ditch at the foot of the bastion.

The site consists of the filter and operations rooms with the usual plotting tables plus other radio and cypher rooms. In addition there is the operations room for the Sicily invasion which includes a large wall-painted map and various cabins overlooking this.

The enthusiastic guide stated that (with the exception of the plotting tables) all the equipment and facilities were genuine as left after the RAF departed, but as the rooms were purported to have been modified in the 1950s and the RAF didn't leave until the late 1970s, it's not clear what era of originality we were seeing.





*One of several entrances to the Mellieha shelter complex.
Photo Ben Roberts*



The wall map. Photo Mark Dalton



*RAF squadron readiness room in 1943
The same room today. Photo Mark Dalton*



While the rooms were well presented it was clear that the complex extended much further and various unlit passages led off the rooms into darkness. We were informed that the complex had been used as a NATO Comms Centre until the early 1970s and intriguingly that two bunkers were being built which were abandoned at the end of the Cold War. The NATO area is apparently being refurbished and will open to the public in 2015 or 2016, with possibly some form of ‘exploration adventure’ access being possible to the bunkers, although details were sketchy to say the least.

Civil Defence

The other area of intrigue for Cold War buffs is the Malta Civil Defence force. Unsurprisingly, the organisation was very similar in idea to the UK version but survived a little longer, finally disbanding in 1972. One of the interesting facilities they operated was a series of Emergency Underground Flour Mills. Seven of these were built in 1955 in areas away from population centres and could mill and store grain in the event of an emergency.

The force appears to have been largely headquartered in Mosta, where a bunker was built to protect against nuclear fallout, with a number of WWII shelters also being repurposed to give a level of protection as well. An internet search indicates that the main bunker was apparently still equipped and in good condition in the 1990s but is apparently now stripped, heavily vandalised and an asbestos hazard.

All in all, Malta is a very interesting place to visit and I am sure there is much more to see. It would be particularly



Part of the nuclear shelter at Mosta.
Photo Matthew Mirabelli

interesting to find out more about the history of the Mosta bunker facility and of the NATO rooms in Valletta. Possibly a Sub Brit trip for the future.

Further info: www.maltaatwarmuseum.com/
Facebook Malta Underground -
www.facebook.com/MaltaUnderground

More on air raid shelters in Malta and the Lascaris War Room from Paul Sowan

The pages of *Subterranea* in recent issues have contained a number of articles detailing the physical nature of sub-surface air-raid shelters, but what these places were actually like to live in during bombing raids has received rather less attention. What about the smells, sounds, lighting levels and general ambience in the shelters? Light is thrown on this aspect by James Holland's book about the siege of Malta, 1941 – 1943.

Malta, an island in the Mediterranean a little smaller than the Isle of Wight, became a British Crown Colony in 1815 (presumably on account of its potential to host a strategically located naval base), achieved independence in 1964, and became the Republic of Malta (including also the smaller islands of Gozo and Comino) in 1974. At the time of World War II the main island hosted British air fields and an important harbour and submarine base at Valletta. The rather larger Italian island Sicily lies 60 miles to the north. Around 200 miles to the west lies Tunis, capital of Tunisia. To the south, at a distance of about 220 miles, is Tripoli, capital of Libya. By June 1941 all those places were controlled by the Axis powers (Nazi Germany and Fascist Italy). Mussolini had joined Hitler, declaring war on Britain on 10 June that year, and from the following day Malta suffered over 3,000 air raids from Italian bases in Sicily.

It was a consequence of the siege conditions that the Maltese and the Allied servicemen based on the island sought protection in air-raid shelters, some of which were excavated into the soft limestone of the island. James Holland has given a description of some of these, as follows ...

The Government had started building a number of air-raid shelters. Private cellars were requisitioned and

expanded. Under the bastions of Valletta and the Three Cities, there were a number of cellars and garages that were developed into much larger shelters. Many [people] began digging their own as well. Maltese limestone, baked hard near the surface, is comparatively soft well below ground, friable enough to scratch a MARK with a fingernail. With picks and chisels one could cut chunks of rock with comparative ease.



The Shelter in South Street, Valletta was described in a newspaper as 'absolutely choked with beds so that people with more consideration for others who have not brought a bed down with them find it very difficult to find a place to stand inside the shelter'

Many of these shelters were far from comfortable, as the following extracts demonstrate ...

Suzanne Parlby [a newly married women aged 19 at the time] was now spending most of her nights in the shelter carved deep into the rock beneath the hotel. There were about forty staff and guests, and each soon established their own patch where they would put down their bedding. Suzanne used to troop down the stairs with her deck-chair, rug, cushion and a basket. In this she kept a wide-necked thermos of water, her gas mask, biscuits, sweets, jewellery, a torch and, most importantly, her insect repellent. The mosquitoes and sand-flies never seemed to be far away. Suzanne took her gas mask with her everywhere, less for protection against enemy gas attacks than the choking dust and possible [mains] gas leaks caused by bomb blasts.

Suzanne Parlby worked on cipher decoding for Military Intelligence stationed in the requisitioned hotel Auberge de Castille in central Valletta. Her perceptions of the shelter continued ...

The shelter was a large circular cave. Most of the Maltese were down away to the left of the entrance. Suzanne's patch was over to the right, near the wife of a naval officer and her young baby, and next to an alternative exit up on to St. Lucy Street. Down there, in winter, it was not cold but warm – or rather warm

and damp. One could feel the moisture on walls. Any bedding left in the cave would soon be covered in mildew. Candles placed on little ledges cut into the rock would flicker gently, suffusing the shelter with a dingy orange glow. There were no facilities, just what they took down with them. While Suzanne considered herself perfectly capable of hanging on all night if she needed to go to the toilet, she was slightly horrified to find the Maltese simply did whatever they needed to into a bucket. Fortunately the cave was so big that she did not feel cramped in any way, and despite the humidity and all the noise – bombs crashing overhead babies crying, people praying – Suzanne still managed to sleep.

Subsequently, Military Intelligence was relocated from the hotel to what was considered to be a safer location, an ‘underground complex’ where the RAF Fighter Control was already stationed. This site had been ‘built into the bastions at the Floriana end of Valletta’ and was ‘a labyrinthine complex of tunnels and rooms’. At this new location, Suzanne Parlby spent most of her time underground, working as well as sleeping.



Two views of the RAF Sector Fighter Control Room of the Lascaris War Rooms in 1943. Note the door to the Observer Corps room. The Observer Corps started operating from Malta late in 1942

Later in his book Holland noted another shelter on the harbour front in Valletta, next to the Wills cigarette factory. Here there lived one part of a large family which had been divided for want of sufficient shelter space. Two young men and their mother occupied ...

... a hundred feet below ground, a room of about eight feet by four cut into the rock off the main passage of the shelter. The ‘room’ had roughly constructed bunks and even electric lights, but nothing more; no doors, no toilet, no water, and no natural light. This hell-hole was now home, as it was for 780 other people in the shelter.

On one occasion, Suzanne Parlby and others were trapped underground in a shelter under the St. James Hotel, when this was destroyed by a parachute mine ...

In the cave underneath, Suzanne and the rest of the guests heard the most hideous explosion and the crash of tumbling stone and masonry. Reverberations ran through the rock. In moments, the cavern filled with a thick impenetrable fog. Breathing became very difficult because of all the dust and grit that blew down with the blast. Suzanne immediately put on her gas mask, but incredibly, despite the intensity of the recent bombing, no one else had thought to bring either their gas mask or a flask of water. Although it was hard to see what one was doing, she managed to take her Thermos flask from her basket and hand it round so that everyone could soak their handkerchiefs in order to cover their faces with a makeshift dust-mask. The naval wife also had some of her baby’s nappies with her, which were hastily used for the same purpose.

As the dust began to settle, they all saw to their horror that large blocks of stone, once the hotel walls, now completely blocked both entrances to the shelter. They were entombed. Suzanne also heard a hissing sound and guessed there must be a gas leak somewhere nearby. Although frightened, she did not think they would die, as she was sure they would be rescued. She was also calm enough to realize that since she couldn’t smell the gas, the threat could not be that serious.

Later ...

The raid passed and they were left sitting down there in an eerie silence. Not a sound could be heard from above. Several hours went by – an eternity. Then, suddenly, muffled voices. At last, rescue was at hand.

The rescuers above ground, having managed to confirm that the nearly forty trapped people were all still alive, set to work to clear the blocked steps, and all duly emerged to brush off their now very dirty clothes and breathe clean air again. Three of the four walls of the hotel had been destroyed.

Outside Valletta, Holland tells us that ...

Despite the lack of machinery, shelters had been dug in every town and every village, enough to keep the entire population safely underground. Most had been carved by hand with picks and chisels. Because the majority



of raids were at night, many people spent their sleeping hours in these underground caverns. For the most part, people took to these conditions well, adjusting to the lack of privacy and difficulties with hygiene’.

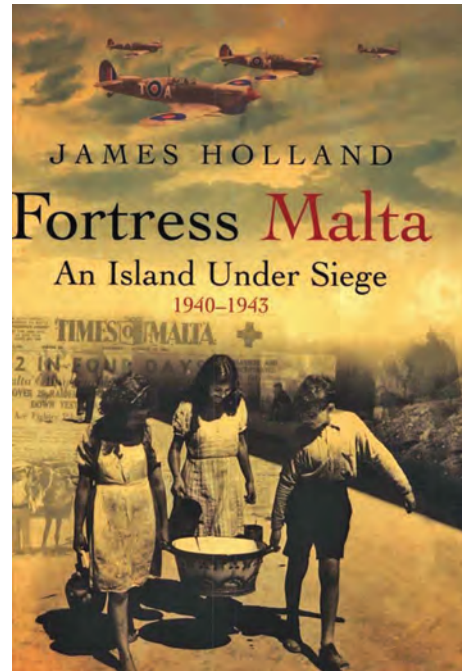


Shelter in a former railway tunnel in Valletta

Suzanne Parlby, now living in a flat in Guardamangia, which Holland tells us overlooked Marsamxett Harbour but does not include amongst the locations shown on the map of the island included in the book, had the use of another subterranean shelter ‘down the hill, mostly used by the Maltese’, which was ...

‘... like most others – dark, damp and dismal. Suzanne would go down some stone steps, then pass a shrine to the Virgin Mary, permanently lit by a small lamp. Next to the shrine, a dark corner was used as a toilet. Throughout the night a large number of the Maltese would pray and chant aloud. Babies cried. And [in the winter] it was cold above ground, underneath it was still hot and humid, and smelled of sweat, cigarettes, urine

and garlic. “The stink down there was truly awful,” says Suzanne. “Life in the shelter really was very unpleasant. You had to take your bedding down every day – if you left it overnight it would soon become damp and mouldy.” Almost the worst aspect, however, was the maddening inactivity of sitting and lying in deck-chairs, and just listening to the raids above – estimating where each whistling bomb was going to land. On your house? On the shelter? She had begun to fear being trapped underground again and that she might not be so lucky a second time’.



SOURCE: HOLLAND, James, 2003, *Fortress Malta: An island under siege 1940 – 1943*. Orion Books Ltd: xxv + 485pp [ISBN 978-0-3043-6654-5] [Pages 65, 108 – 109, 120 - 121 and 226; amongst the illustrations are photographs of men digging an underground shelter, and the interior of the sub-surface RAF control room] [The book can be purchased on Amazon from £ 2.49]

Chislehurst ‘caves’ revisited, SE London

The extensive chalk mines at the bottom of Old Hill, Chislehurst, have been operated as a tourist attraction for over a century, currently open Wednesdays to Sundays inclusive, with 45-minute guided tours every hour on the hour from 10.00 to 16.00. Hand-held oil lanterns (about one to every four or five persons) are issued by the guide (taking in your own lamp and photography underground are forbidden). Although current publicity for the ‘caves’ and a booklet on their history by the late Eric Inman, on sale there, portray them for what they are, abandoned chalk mines, the cave guide leading a recently attended public tour presented all the old nonsense about twenty miles or more of tunnels dating back 4,000 years or so, druids’ sacrificial altars, a ghost, and a claimed ‘iguanodon’ fossil in the ceiling. In fact the tunnels are primarily of interest

for their secondary uses, namely roles in World War I (explosives storage) and World War II (air-raid shelters) and as a defunct mushroom farm and subterranean tourist attraction. Details of opening times and prices can be had at (T) 020 8467 3264 or www.chislehurstcaves.co.uk. The proprietors are Kent Mushrooms Ltd, although none have been grown since before World War II!

References

- CHEESEMAN, Jill, *Chislehurst Caves: a child’s wartime memories 1939 – 1945*. Chislehurst: Kent Mushrooms Ltd: 16pp [on sale at the caves]
- INMAN, Eric R., 1996, *Chislehurst Caves: a short history*. Chislehurst: Kent Mushrooms Ltd: 11pp [on sale at the caves]



Did Monty have a hideout in Reigate?

Nick Catford



One of the cross-chambers in 1986. Photo Nick Catford

Ask people in Reigate about secret tunnels and anyone of a certain age will tell you about ‘Monty’s hideout’, an underground military headquarters built for General Montgomery during WWII. Let’s examine the facts:

The Chelsea Speleological Society included an intriguing article titled ‘Reigate – Monty’s Hideout’ in their journal *More secret tunnels in Surrey – Volume 5*. This article was written in 1968 by John Henderson, Brian Hillman and Harry Pearman (Brian is a current Sub Brit member and Harry is one of our seven honorary members).

“These tunnels came to light through a writer who signed himself P.M. and gave no return address. Our thanks to him should he read this. The NGR is TQ 255518. As you go down Reigate Hill there are a number of private roads leading off on the right-hand side. One of these has a set of notices to indicate that it leads to private houses including one called Quarry Point. This house is found about 200 yards along the road. Just beyond this some paths lead off on the right uphill. In the undergrowth are piles of debris and the remains of an old railway line which leads up steeply to the base of a large chalk quarry, visible above the trees. Climb up the railway line and you come to a levelled area

with the remains of a number of corrugated iron buildings on it. Heading east towards Reigate Hill, you come to three doors in the hillside about 50 yards apart. The first is blocked by pieces of chalk that have rolled down from the quarry. The others are open.

The tunnels are lined with corrugated iron throughout, still in good condition. This rules out any hope of a compass survey. Therefore only a sketch is included. The total length of passage is of the order of 3,000 ft. Only in one or two places is chalk visible.

Each of the three entrance tunnels has a number of small offshoots. The three are connected by a long cross-passage, from which a number of short tunnels lead to a second cross-passage. Everywhere there are lengths of piping – the remnants of disused plumbing, electricity and ventilating systems. It looks as though somebody started to strip the place and then stopped. The accent is on ventilation; huge pieces of trunking are scattered everywhere, ready to bark one’s shins or put one’s eye out.

According to P.M. it was an underground control centre for Southern Command and built at a time in the Second World War when General Montgomery commanded it.



The place is designed to be gas and shell-proof. Iron doors are ready to seal it off and the ventilation equipment would filter the atmosphere.”

See www.subbrit.org.uk/sbsites/sites/r/reigate_south_east_command_headquarters/index.shtml for more reports of exploration of the tunnels in the 1950s and 1960s.



General Montgomery in 1943

Although open in 1968 when visited by P.M., the tunnels were sealed shortly afterwards. The *London Evening Standard* reported on 28 February 1968 that the entrances to Monty’s hideout were dynamited in on that day. It noted that the tunnels were dug by Welsh miners in 1939, were owned by a Mr Don Kidman and were where the D-Day landings were planned from. Incorrect on three points – that’s the press for you!



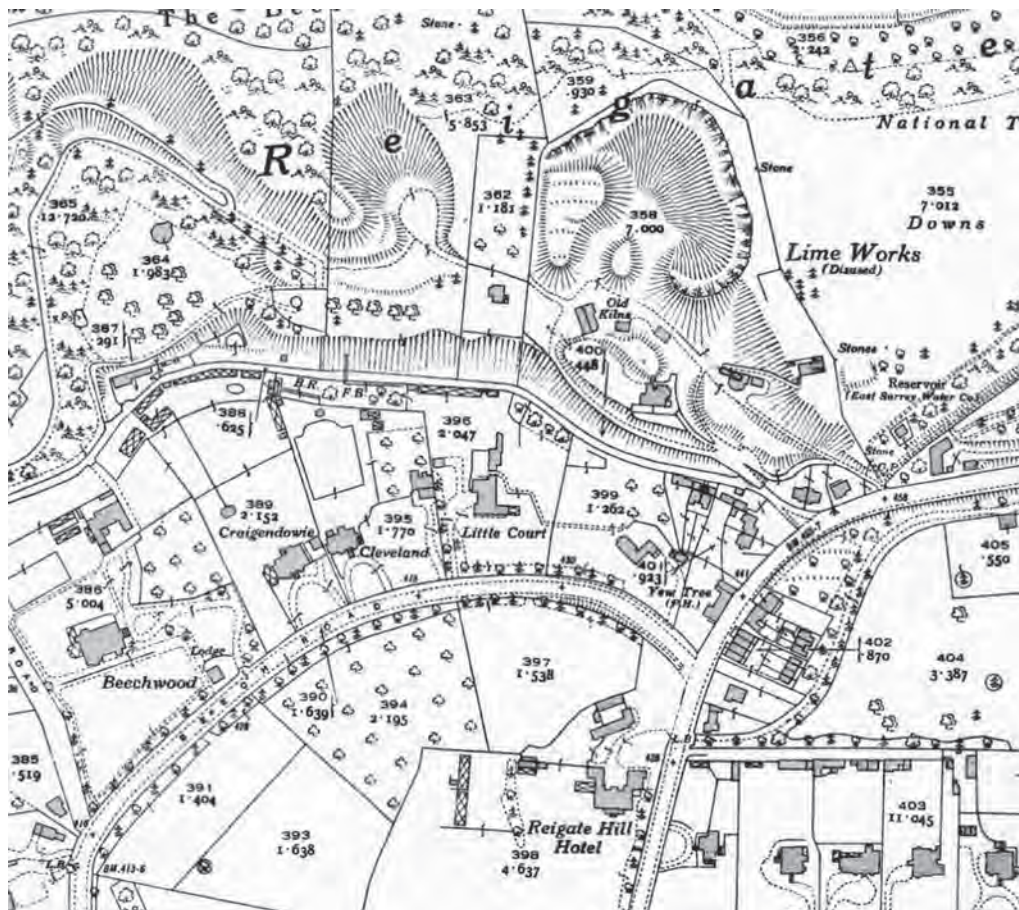
The quarry seen from Reigate Hill in 1890. The house in the foreground was one of those requisitioned for South-East Command in April 1941

troops in Great Britain came under the Commander-in-Chief (C-in-C) of Home Forces, except those detached to form expeditionary formations. The C-in-C was based with his General Headquarters at St Paul’s

School, Hammersmith. Ranked below GHQ were the five home Commands: Southern, Western, Eastern, Northern and Scottish. There were also a number of small enclaves, one of which was Aldershot Command.

In February 1941 South-East Command was established as a training and holding area for the invasion forces. It was formed from Aldershot Command (Aldershot Command was downgraded to ‘Aldershot Area’ within a new South-East Command) and those parts of Eastern Command which lay south of the Thames; it was under the command of Lt General Sir Bernard Paget.

HQ South-East Command was located at Reigate Hill where a number of large houses were requisitioned. The site was specifically chosen as it included a redundant chalk quarry



1935 1:2,500 OS map shows the Reigate lime works and quarry which closed in 1926.

Most of the large houses to the south of the quarry were requisitioned for South-East Command in April 1941. When the Reigate Hill Hotel was de-requisitioned in December 1944, the building was in very poor condition and the contents were largely missing, damaged or destroyed – this was not uncommon.

South-East Command comes to Reigate

During WWII the headquarters of the British Army was the War Office, which exercised authority over all British troops everywhere through the commanders-in-chief located in the regions where troops served. All British

which would be suitable for the construction of an underground divisional battle headquarters. The General Officer Commanding (GOC), Lt General Sir Bernard Paget, occupied a comfortable villa called Underbeches in Underhill Park Road on the hill overlooking Reigate.



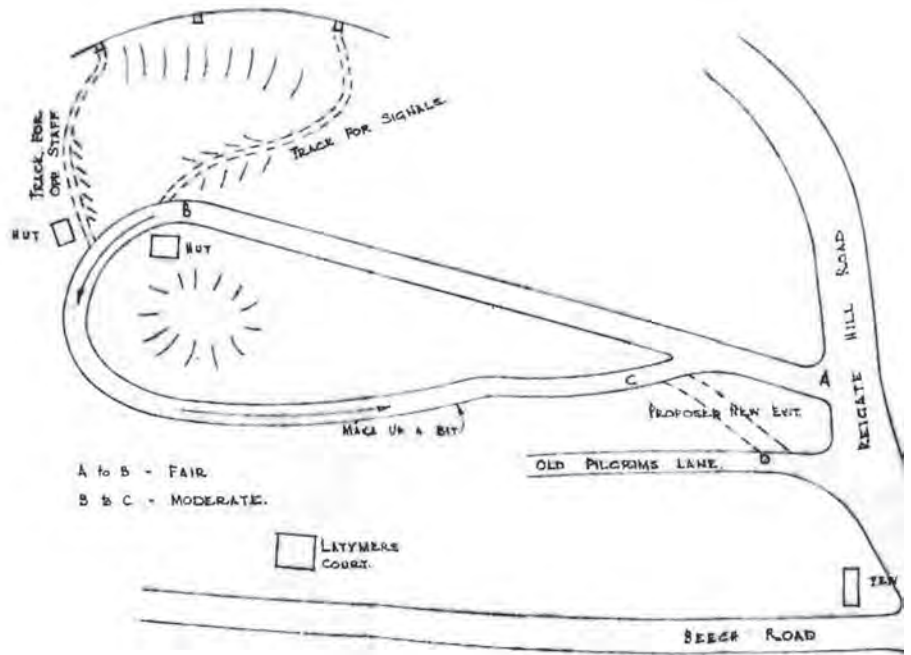
Construction of the tunnels begins

Construction of an underground South-East Command shelter (the official records describe it as this and nothing else) started immediately with the arrival of the first detachment of No 2 Section of 171 Tunnelling Company RE during the last week of January 1941. They comprised two NCOs and fourteen men under the command of 2nd Lt L C Ayre. Royal Engineer tunnelling companies were specialist units of the Corps of Royal Engineers within the British Army, first formed to dig attacking tunnels under enemy lines during the WWI. The men were billeted in the town as no other accommodation was available.

Their instructions were: "To construct an underground shelter with a cover of 90 feet, access being by three adits leading to a grid consisting of back and front galleries, nine chambers, a stand-by engine room and a gas filtration room. All chambers and galleries are to be supported by steel colliery arches and arcuate sheets (heavy-gauge corrugated steel)."

The same method of construction was used throughout the southeast at locations such as HMS *Forward* in Newhaven and the Fan Bay deep shelter at St Margaret's Bay.

The site of the dug-out (a military term for this kind of installation) "was in a disused chalk quarry, which had been abandoned by the owners as being too dangerous to work. The chalk was of the loose block variety, cracked in all directions and having treacherous clay backs in it. Support was necessary during the excavation of every ring length. At first girders were slung under the arches and carried forward to the face which were then supported by cantilever action. This method was not completely successful and was soon given up in favour of a high-level pilot tunnel which was employed with success over 90% of the main grid."



Original plan of the quarry provided with a 171 Tunnelling Company RE progress report. This shows the quarry floor and the three adits. Note the left adit is for Operations staff (i.e. the HQ) and the right adit is for Signals staff (i.e. the Communication Centre). A one-way traffic arrangement is indicated with a new exit onto Reigate Hill proposed.

During the first week of February seven railway wagons of colliery arch material was unloaded at Reigate station and stacked on the ground adjacent to the line as arranged with the railway authorities. This was then taken by lorry to the quarry where preparations were in hand to scale down the face of the quarry where necessary. Two small houses were requisitioned and were being prepared to accommodate a complete tunnelling company section. By the middle of February 1941 the three adits in the shelter had been started and a total of 10,000 cubic feet (approx) of spoil had been excavated. By the beginning of March the three adits had been driven to a total length of 120 feet and lined with sleeper sets. Three shifts were employed to ensure that progress was rapid. Camouflage was erected over the adit entrances.

On 7 March the work was taken over by 173 Tunnelling Company RE plus an odd section made up of surplus men from 171 and 172. This odd section was posted to 172

	Tunnel Size	Tunnel Length	Cubic feet excavated
No 1 Adit	5' x 7'	120ft	4,200
No 2 Adit	5' x 6' 6"	112	3,920
No 3 Adit	5' x 6' 6"	104	3,640
Back gallery	9' x 8"	297	22,275
Front gallery	9' x 8"	351	26,325
Chambers	9' x 8"	391	29,325
Chambers	10' 6" x 8'	26	2,520
			96,545
Man-shifts			
	Underground	6,216	15.5 cu ft per man shift
	Surface	7,730	
	Pioneer Corps	2,726	
	Total	10,672	9 cu ft per man shift

Company on 18 May 1941, their place being taken by the other two sections of 173 Company from Tunbridge Wells, thus making a full company on the same job for the first time. Construction of the dug-out was completed on 13 June 1941 and handed over to GC Company RE. The tunnel network is listed as the South East command HQ. In the event of an invasion, Reigate would continue in that role but any one of the other underground command administration and signals HQs at Aldershot, Tunbridge Wells (Broadwater Down) and Canterbury (Barracks) would be able take over overall command. The plan of the tunnels reproduced here shows specific designated areas for the HQ and for the signals personnel who ran the communications centre which was one of the primary functions of the bunker.



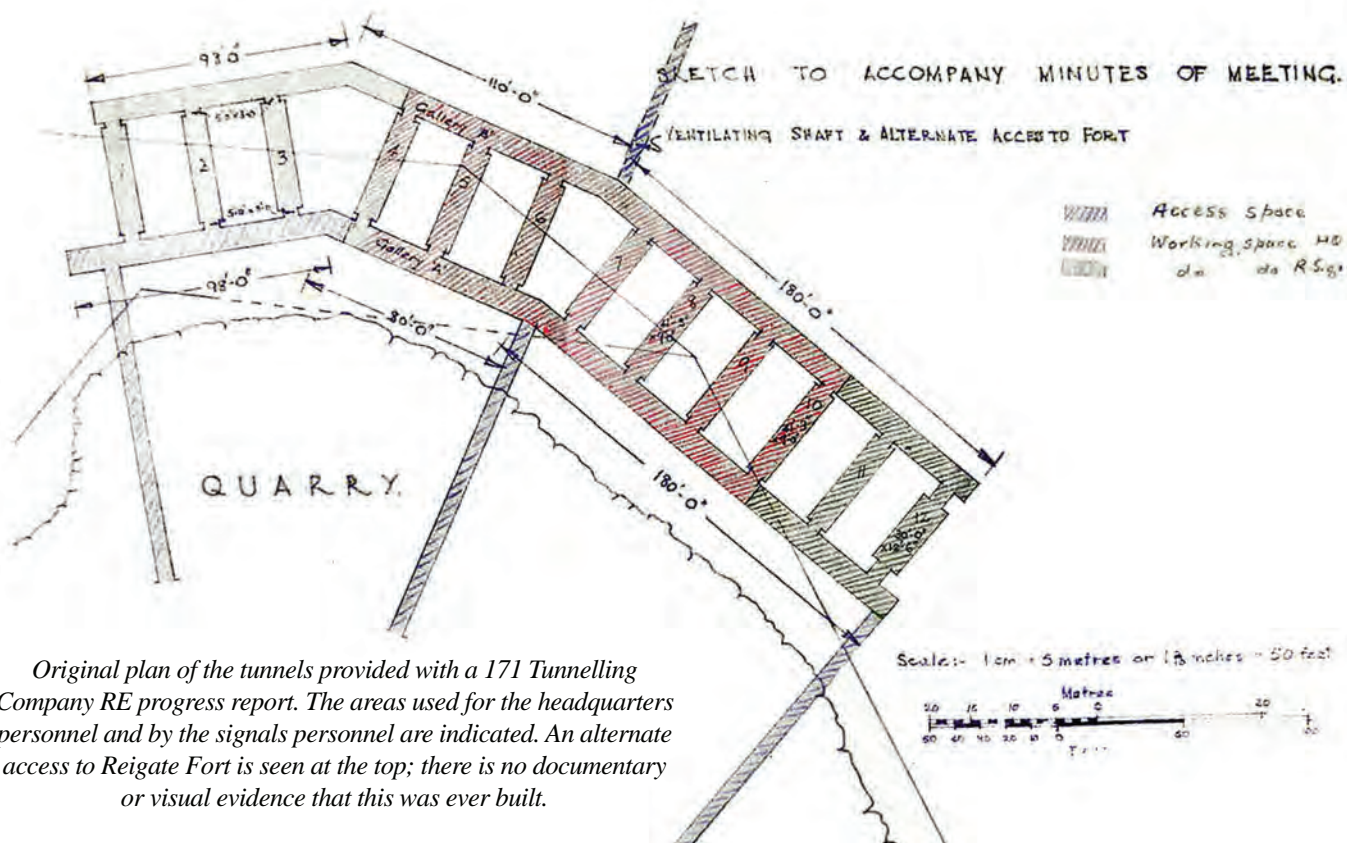
Private Eileen McKerron

Radio operator Private Eileen McKerron remembers her time in Reigate: "I was amused to be informed that I had been posted to H.Q. South-Eastern Command in Reigate, Surrey, my home county. Reigate is situated in the North Downs at the bottom of Reigate Hill, a huge steep hill. The

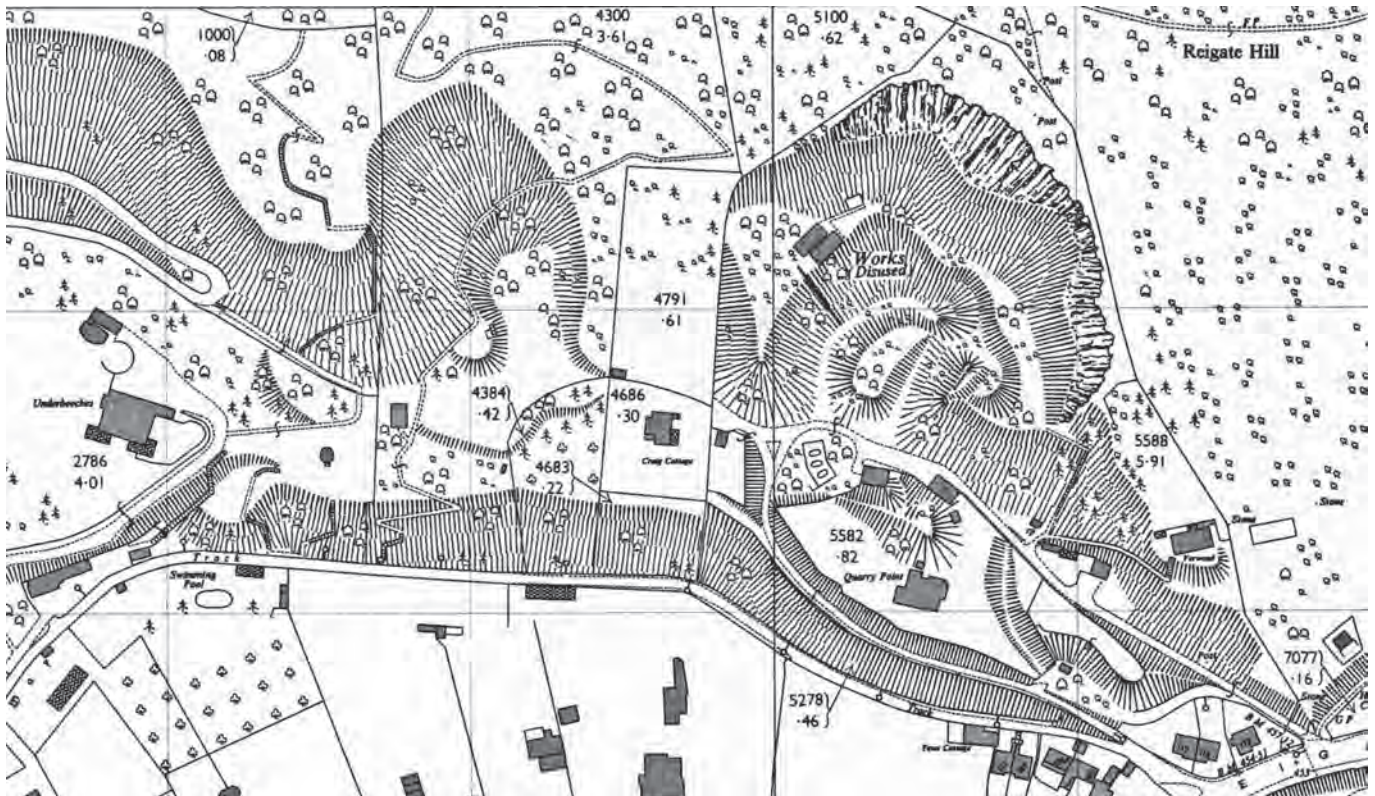
signal office had been tunneled out of the chalk hills. To reach it we had to climb a steep flight of about eighty steps and negotiate a narrow path along the edge of the slope. It was tricky at night as there were no lights of course. The whole area was covered with camouflage material. The office consisted of numerous tunnels leading to the different areas of the office, the cipher room, the office, the radio room, the switchboards and the teleprinter room. There was continuous transmitting on the radios, 24 hours a day, 7 days a week, so we were always busy. Somehow we had a sense of urgency when so many messages were flagged: IMMEDIATE, MOST IMMEDIATE, URGENT. When we heard the news of the invasion of Normandy we knew why the messages had seemed so important. Towards the end of the year the offices weren't so busy. Some of us were transferred to other units. I was sent to HQ London District."

South-East Command had five different commanders during its short existence between February 1941 and November 1944:

- February 1941 – December 1941 Lt General Sir Bernard Paget
- December 1941 – August 1942 Lt General Sir Bernard Montgomery
- August 1942 – March 1944 Lt General Sir John Swayne
- March 1944 – September 1944 Lt General Sir Edmond Schreiber
- September 1944 – November 1944 Lt General Eric Miles.



Original plan of the tunnels provided with a 171 Tunnelling Company RE progress report. The areas used for the headquarters personnel and by the signals personnel are indicated. An alternate access to Reigate Fort is seen at the top; there is no documentary or visual evidence that this was ever built.



1964 1:2,500 OS map. Two flights of steps described by Eileen McKerron are shown; these are not original quarry features. The three adits were at this higher level. It is unknown if any of the buildings shown in the quarry are military buildings or earlier. Underbeeches, the accommodation for the General Officer Commanding is seen on the left.

On 25 December 1941, Montgomery was appointed to GO C-in-C South-East Command at Reigate in the rank of Temporary Lieutenant General, until August 1942. Montgomery was the commander of South-East Command for only eight months but because of his subsequent hugely successful and significant campaign at El Alamein in Egypt, he became something of a national celebrity.

This celebrity status was retrospectively applied to his time in Reigate. As a result almost every house that was part of the anti-invasion headquarters on Reigate Hill claimed him as a resident and the tunnel network is now affectionately referred to as 'Monty's Hideout'.

So in response to the question 'Did Monty have a hideout in Reigate?', the answer is 'no'. The dug-out was just a normal facility of a major military command at that time and served the GO's C-in-C who occupied those positions in succession and should not be attributed to a particular person. It is doubtful if Monty and the other four commanders ever visited the tunnels.

HQ South-East Command was based in normal offices in the requisitioned houses and temporary hutting on the surface. South-East Command was disbanded at the end of 1944, its area being split between Eastern Command and Southern Command.

In 1954 it was proposed that in any future war, Eastern Command would once again be split with South-East Command being reformed at Reigate. It was initially proposed to use the tunnels but a new plan saw all commands to have protected surface bunkers.



Although the tunnels were described as "dynamited" by the *Evening Standard* in 1968, one adit was still accessible in 1986 with no evidence of any explosive damage. Photo Nick Catford
Eastern Command would be located at Wilton Park with a sub-division surface bunker on the parade ground at Bury St Edmunds barracks. The proposed site of the Reigate bunker is not known. Neither bunker was built following the Strath report (1954/5) on the H-bomb and the army command plan was cancelled.

Tunnels are sealed and reopened and sealed again

Although according to the *Evening Standard*, the entrances were 'dynamited' at the end of 1968, access to one of the adits was regained and an official visit was arranged by the Unit 2 Cave and Mine Society (now Wealden Cave and Mine Society) in April 1986. It was possible to clamber into one of the adits to access the tunnel network. The entire system was found to be generally in good condition with no collapses. Much of the ventilation trunking and the electrical fittings were still in place.



One of the 11 chambers. Throughout the bunker numerous electrical fittings are still in place. Photo Nick Catford
Looking south-east along the front gallery, the chambers are to the left. Photo Nick Catford



Shortly after the visit, the adit was resealed by the landowner to deter people from climbing down the hill to access the tunnels. Since then the tunnels have remained inaccessible. The author visited the site again in the late 1990s with permission of Len Taylor, the owner of Quarry Point. No evidence of the adits could be found. A construction plan for the tunnel network shows a ventilation shaft and alternate access to Reigate Fort from the centre of the back gallery.

There is no documentary evidence that a tunnel leading to Reigate Fort was ever built and close examination of the tunnels by the author in April 1986 showed no evidence of any other tunnels.

Reigate Fort

Reigate Fort (a mobilisation centre) was built in 1898 as part of the London Defence Scheme. However by 1906 the Government no longer felt that it was needed and the fort was decommissioned and subsequently sold to a private owner in 1907. In WWI the fort was used for storing ammunition. It was recommissioned in WWII and possibly used by the Canadian Army. A number of military structures dating from WWII can still be seen there.

One of these, 200 metres from the fort, is a rectangular building partially sunk into the ground with its two

windows barely above ground level. It has two rooms and a kitchen range. It was initially thought that the building may have been some sort of observation post. During investigations into the building a hole was found in the centre of the roof. It's roughly 10cm in diameter and extends vertically through the roof of the building and could have been a socket for a radio aerial. Electrical insulators were found in the building and two cut copper wires have also been found close by; these appear to run down the side of the hill towards the tunnels and it has now been suggested that the building may have been a radio communications station linked to tunnels below. During the war, there were many radio aerials around Reigate Hill and the area's nickname was 'Radio City'.



This building, close to Reigate Fort, may have been radio communications station linked to tunnels below.
Photo James Kemp

Today the tunnels remain sealed and inaccessible. The old quarry face is owned by the National Trust. They have been approached about access to the tunnels and negotiations are still ongoing. Quarry Point now has a new owner who is not interested in allowing access to the quarry. The only easy access is through his property.

Other underground Southeast Command headquarters

Aldershot Command had its tunnel network located in Cemetery Hill. It comprised two long adits feeding into a similar layout with six chambers linked by front and back tunnels. When the site was visited by the author in the early 2000s there was no trace of the adits but a ventilation stack could still be seen on the hill. The two sealed entrance stairways at St Martins Avenue, Canterbury were reopened by the Kent Underground Research Group in 2004 and 2007 but the tunnels at the bottom of the stairs have collapsed and were considered unsafe to dig. The tunnels at Broadwater Down, Tunbridge Wells, are partially flooded and the three entrances are now sealed after remaining open for many years. See www.subbrit.org.uk/sb-sites/sites/t/tunbridge_wells_broadwater_down/index.shtml

For more on Reigate Fort, see **News – Military and Defence** in this issue. (Page 8)

Sources: National Archive – Various files relating to 171 Tunnelling Company – Royal Engineers
 ATS Remembered (web site)



Poland: April 2015

Roger Gosling



Part of the tunnel complex in the marshalling area near to shafts A1 to A3 in the massive MRU tunnel complex



Some of the group waiting for their Friday evening meal outside a restaurant in Poznan city market square

This was the second long weekend to Poland organized by Sub Brit member Chris Wilkins and his Polish friend Raf Marcinkiewicz. The tour started in Poznan and six of the group arrived a day early (courtesy of Ryanair) to look round the ancient city. During World War II, the city was incorporated into Germany and many of the Polish residents were imprisoned, expelled, or used as forced labour. Poznan was eventually liberated by the



Our 'Communist Era' minimalistic hotel in Świebodzin. Note the lorry with no wheels in the hotel car park and the vertical fire escape ladders. My room was next to the first floor fire escape; the window was blocked by a very large potted plant / bush that was rather too heavy to move in an emergency!

Red Army in February 1945 but the fierce fighting left much of the city in ruins. Restoration has recreated the original structures in the historic Old Town.

On Friday the rest of the party – 18 of us in all – arrived and rendezvoused in the Campanile Hotel. As usual – and long may it continue – the group was a mixture of



long-term members and new faces. The group went by tram into the city centre to eat but most of us took a taxi back as they were so cheap.

Cold War Communications

As Saturday dawned our exploration commenced and we set off in a coach to visit our first site – the Poznan Presidential Cold War Communications Centre Bunker. Situated on the outskirts of Poznan, this was a one-storey underground Cold War communications hub for the President of the Poznan district. It is open to the public on selected days, including the day of our visit. Above the bunker is a normal looking two-storey house which doesn't seem to have any connection with the Cold War use.



The residence above the Poznan Presidential bunker. Apparently lived in but not connected to the bunker

The bunker was built in the 1950s and 60s. Until 2000, its existence and location were still kept secret. Officially its existence was not acknowledged until 2010 and its location not until 2012. It is now open at least once a month as a subsidiary of Wielkopolska Museum of the Struggle for Independence. It was designed as 'command post for Civil Defence (Military Unit No. 2741)' and covers an area of about 500 square metres.



The main communications nerve centre of the Presidential bunker. Note the small cubicles / telephone kiosks with a counter and glass screen. These would be manned by officials from all the necessary services who would work in secret not knowing what his neighbour was up to

It is basically a command centre, with offices, living accommodation and the backup needed for independent unsupported operation in the event of a nuclear attack. However the museum staff do not believe that it is adequately designed due to its shallow location and the lack of adequate storage space; it would have to be reliant on external supplies of food for instance.



This telephone exchange is in such good condition that it could easily be restored to working order

The bunker is in excellent condition, not damp and peeling as so many are, and with lighting throughout. Quite a lot of the original equipment is still there and we were allowed about an hour for a good look around. We have not been able to trace a plan of the bunker. In one room there were about twenty little booths, a bit smaller than a phone kiosk, presumably for telephone or teleprinter operators.

On one side of this is a glass screen with a counter and hole for passing messages on paper to whichever utility or service he was responsible for instructing. This 'secrecy within secrecy' inside the bunker must surely have turned out to be counterproductive. The site has its own diesel-powered electric generator; I wouldn't be surprised if it's still in working order.

Steam Railway Museum



Inside the loco shed there were four still in working order. Restoration work is continuing on some others in the shed. No restrictions on walking around or falling into one of the pits! Outside the shed there are several locos that are well past hope of ever being restored

Our next stop was at the “Roundhouse” steam locomotive maintenance yard in Wolsztyn. The site was constructed between 1905 and 1912 and is still an active maintenance depot; there are about five locos still in use and we could wander around freely. There are several old rusty locos (some with ten – yes ten – driving wheels, something I have never seen before) and some preserved trucks of various types, also interesting old-fashioned maintenance equipment – still in use, including a huge lathe.

We had the bonus that a steam loco arrived (on time as we were told at 13:02) back to the yard. This was just before we had to leave and we watched it arriving, onto the turntable, being turned (pushed by hand) then refuelled with coal and water. According to the website it seems the yard still provides two steam locos a day for local rail services. As their website (translated) says “*Only here you can watch hot, gushing steam locomotive.*” The website (<http://parowozowniawolsztyn.pl/>) has over 1000 good photos.



Loco 0149-69 being turned prior to being refuelled with coal and water. Made at the Fablok - Chrzanów workshops in 1949

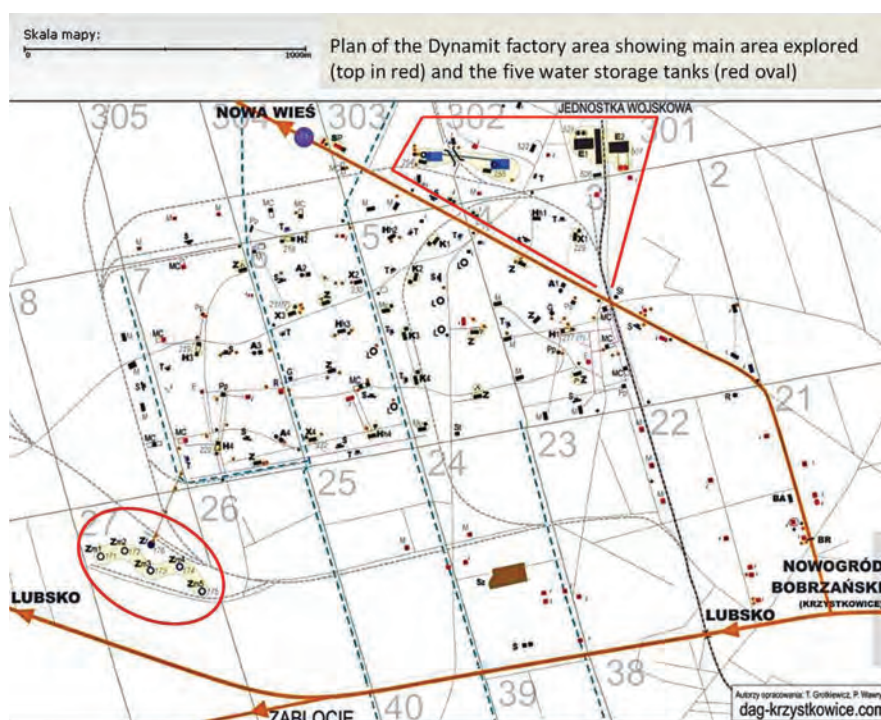
Our own refueling was taken care of by excellent packed lunches for both Saturday and Sunday which were provided by friends or relations of Raf’s and picked up at pre-agreed places to fit in with our itinerary. The budget for the weekend also included a seemingly never-ending supply of bottled water which was most welcome as the weather for the whole weekend was warm (if not hot at times) and dry. Thankfully we did not get soaked when walking to any of the sites.

Explosives factory site – Dynamit AG

As the website (<http://www.dag-krzystkowice.com/glowna.php>) says “Hidden in the woods of Krzystkowickich the abandoned buildings of former conglomerate Dynamit Aktien Gesellschaft are waiting to be rediscovered. We want to make this place begin to speak in the silence and to reveal the story of what happened in this abandoned factory during the World War II. The potential is great. There are huge production halls, silos, underground canals, roads and railway lines, shelters, and other deserted buildings. Without our help today’s ruins would already have gone into complete oblivion.



Two processing buildings to south of E2. The whole site is heavily wooded



“We cannot allow this to happen, this place should be a living testimony to the vast machinery of the armaments industry. It is the grave of many prisoners of various nationalities, and the branch of the Gross Rosen concentration camp which was long ago re-covered by forest litter. The war dominated everything, with the workforce including ordinary employees from Germany as well as those people forcibly working here.”

This sets the scene very well for our exploration of a huge wooded area with many secrets near to Krzystkowice. Chris allowed us about three hours to look around the triangular part of the site roughly bounded by the cycle track and the north/south railway, just a small part of this vast World War II explosives manufacturing site (the website has

an interactive map at www.dag-krzystkowice.com/mapa_specjalistyczna_ulme.php). To the north of our area there is a current active secret site separated by two lines of razor wire, clear 'no man's land' between and with observation posts and CCTV (this may have also been part of the original Dynamit AG site).

The map (in)conveniently stops just at this point! However the map gives a very detailed view of the layout of the surface buildings. I don't think anyone really managed to work out in any detail how the processes would have worked, but it was a fascinating site to explore. We started near to where a cycle-track crosses the railway line. The railways are shown in two different ways on the map, the north-south line (darker) still exists, but I don't think the branch lines off it (shown more grey) were ever built; there was no evidence of the remains of sleepers or ballast and the ground was not even level in some places! The rail bridge between the settling ponds 254 and 255, however, was built. I don't believe the site could have been used up to anywhere near its planned capacity before being put out of action.



Inside one of the two main production buildings (E1 & E2) at the Dynamit factory. We couldn't work out the processes or work flow routes; research on the internet gives very little about the area

I went into one of the tall chimneys (ref 521); the brickwork is still in excellent condition and it didn't even look like the chimney had ever been used. However most of the buildings were in a very sorry state. Large buildings labelled E1 and E2 straddle the railway line and were particularly interesting. In building E2, it was possible to examine all the floors right up to the roof about five floors up. From the third level of this building a slope went down towards the railway line and met a similar slope coming down from E1.

These must have been for unloading materials at the start of the manufacturing process or loading the finished product. Building E2 also connected through two tunnels to another two buildings to its south, shown as two circles, although these were actually also substantial rectangular buildings. I've not been able to trace any history of the site, not even the dates of construction or when and by who it was bombed.

Photos can't give a real impression of the vastness of this site. There is a 2 minute video at <https://www.youtube.com/watch?v=w7S-4he1o-Y#t=32> which is well worth watching. There's also a very good 25 minute video at <https://www.youtube.com/watch?v=X6trE9T4VrM>. This video is actually another Dynamit AG site at Christianstadt, but the two sites are eerily similar. If only I could understand Polish I would know so much more about the site(s)!



Two views of one of the five massive storage tanks on the edge of the Dynamit factory area a couple of miles from the main part we explored. We believe these tanks were used for storing water to be used for cooling in the manufacturing process. The whole area is now wooded



After our exploration on foot, our coach took us a couple of miles to look at five huge storage tanks (labelled Zm1 to 5 or 171 to 175). These are built up almost entirely above ground and are massive. It was possible to get inside as well as walk up the high earth embankment around them. Although the whole area is wooded, these can be clearly seen on the Google maps satellite image.

And so to bed

After an hour or so we arrived at Hotel Lubuski in Świebodzin. This is a communist-era building and not as luxurious as most hotels these days. Although we were booked in they only had about six cans of beer in the bar and two half-empty bottles of wine. Thankfully there was a Netto supermarket over the road and they had a lot of extra sales for two days!

As someone pointed out, the people running the hotel must be on a basic salary with no bonus, so why bother.



My shower was so small I had to open it to put my knee out to stand on one leg to wash! Breakfast the next morning was much appreciated, with the supplement of cereal from Netto (thanks Tony).



Plan of the underground Miedzyrzecz Rejon Umocniony (MRU) bunker supply system. The 'main line' runs north-south, the rail line has several side branches with the named stations shown in red. On lines without stations there are no rail lines, so the supplies must presumably have been intended to be manhandled on trolleys or similar

We spent the whole of Sunday visiting four parts of the MRU (Międzyrzeczi Rejon Umocniony) fortifications, built on Adolf Hitler's orders between 1934 and 1938 close to what was then Polish-German border as part of preparations for a war against Poland (and Russia). The construction was halted in April 1938, when it was decided that defensive positions in the east of Germany were in fact unnecessary; Germany was stronger than Poland and Hitler planned World War II.

When things changed for the worse for Germany in 1944 some attempts were once again made to improve and

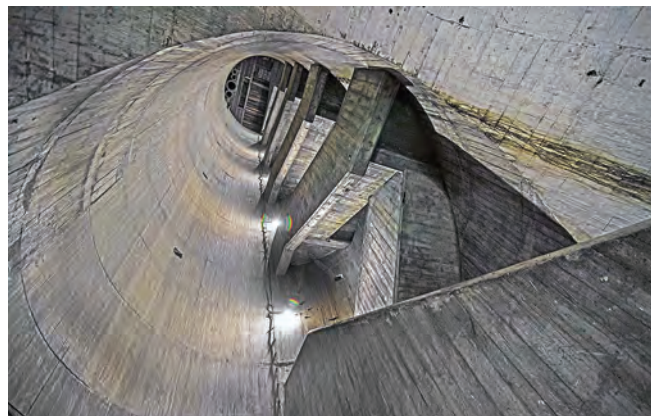
extend the fortifications, but of course the war ended soon afterwards. One account says that the Soviets advanced so rapidly in January 1945 that there wasn't even time for the fortifications to be fully manned.

The mighty MRU

The Miedzyrzecz Rejon Umocniony (MRU) Underground Fortifications consist of more than 50km of concrete tunnels, the main line being about 9km long. This connected a maze of underground infrastructure with the whole lot being buried between 20 and 50 metres below ground. They are considered to be the longest underground defensive complex in the world and connect 26 bunkers to the human and ordnance resources required to operate them. This was designed to be an independent and a self-sufficient "city" with railway stations, machinery rooms, barracks, workshops, ammunition stores, toilets, bathrooms, and was accessed from many shafts as well as tunnel or drift entrances.

Each of the shafts we used had a selection of rooms just below ground level, presumably mainly barracks and associated services; there was little of interest in any of these rooms. I have admiration for the surveyors who worked out how deep to make the system, for there are four or five places where the small amount of water can drain away naturally.

Most of us went into the start of one of the drainage tunnels, between PzW 766 & 714 (see map). PzW is an abbreviation of *Panzerwerk* or (literally) tank works, ie turrets. It is still possible to get a short distance into the tunnel, but the water gets quite deep before too long.



Looking up the 50 metre shaft below PzW716. This is in the part of the MRU open to the public so is lit. None of the other deep entrances we used were lit

Most of our access was via shafts – the deepest around 30 metres deep. The main railway line is (understandably) almost horizontal and was dug out of sand. Then concrete was cast using wooden shuttering; the main tunnel (and most of the side branches we saw) is about 6 metres high and roughly 4 metres wide at the widest part.

The tunnels are also famous for being a home to over 30,000 bats (I don't remember seeing any though). There was a display of bat photos showing all the different types and some amusing picture signs – one obviously meant don't handle the bats!



In the first part of the MRU system we visited, near to the bottom of our entrance shaft

Railway system

We explored three sections of the MRU bunker supply rail system. Based on the plan I reckon we walked 14km (9 miles) underground as well as down and up three long sets of staircases. Chris, Raf and the other photographers lagged behind the rest of us, a method that worked well for all involved. At the end of that we had a hot meal underground before the climb back out. Much appreciated, including the efforts of Raf's friends to supply it all.

The first part is open as a tourist attraction/museum. We had our own guide, Martin, who as well as doing up to three trips a day said he cycled 17 km to work each day – a fit young man! Martin took us about 40 metres down at PzW716 and up 35 metres and out via PzW717. Our entrance was about a kilometre walk from the museum and we passed thousands of triangular concrete tank traps



Station Martha. All the stations have a passing loop, but the main tunnel connections are all single line

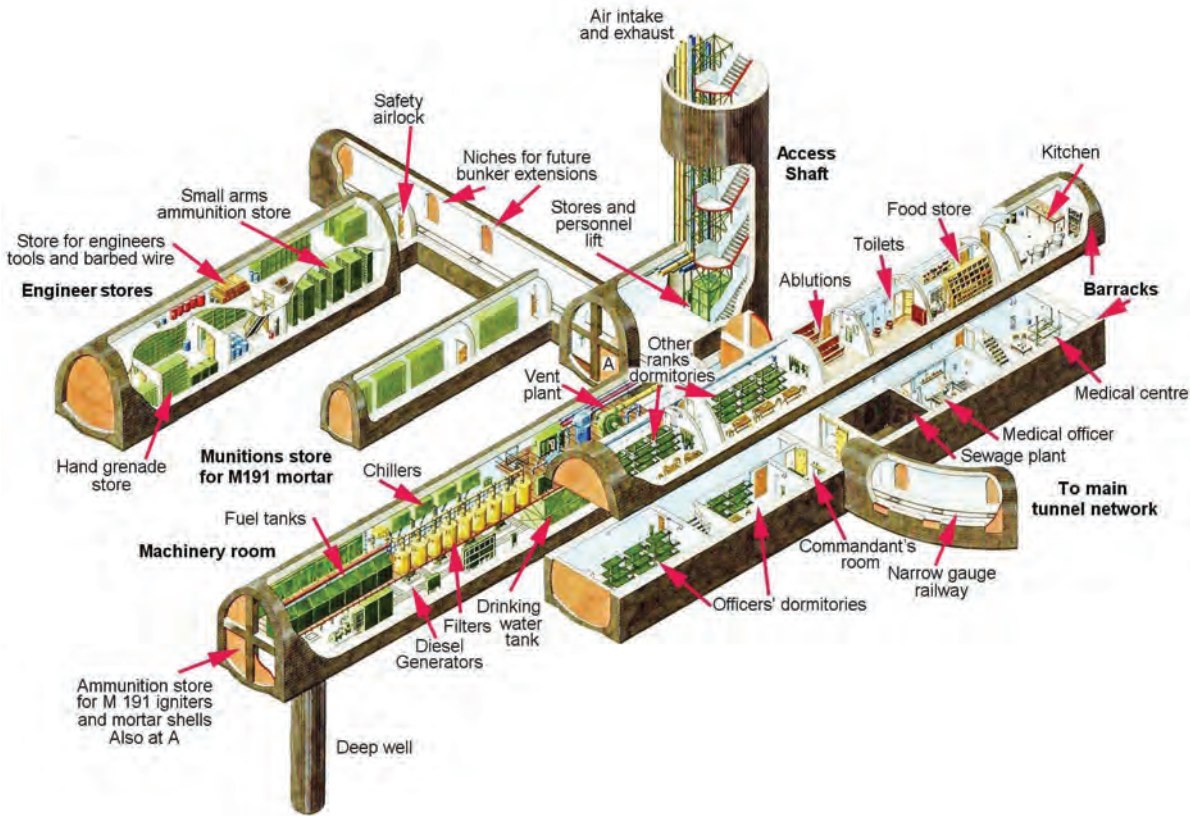
on the way; a collection of 'dragons' teeth' like this is rare because they were so easily swept away at war's end. We went to Heinrich and Gustaw stations and along to PzW765 shaft; this is one of the gun turrets that the system was designed to supply. At Gustaw station there is a railway train consisting of an electric loco and passenger carriage. It's unclear whether this was used during construction or as part of the operational period. The railway is a single line everywhere we saw, apart from the marshalling yard and stations where there is a passing loop. Whilst down there we passed a group of Polish soldiers in uniform whom we had seen at the museum – apparently they were only doing one of the short conducted tours, while we were seeing much more. For our next foray we went into and out of PzW722, where Chris and Raf allowed us free rein to visit the parts of the network that were highlighted in yellow on our plans. We were told to keep away from the red parts! The entrance to this section is usually secured with steel bars, but we were allowed access. We explored the section which included Martha, Dora, Casar and Nordpol stations. Inevitably most of this was just concrete tunnel, but there were several points of interest.

Bunkerites of Poland

The final section we visited was as guests of the "Bunkerites of Poland", the group that Raf and Chris are members of. This area is open to the public, but not on a commercial basis. We went in and out of the Nord shaft and were shown around by Kate. Her English was excellent and she gave us lots of historical information as well as stopping to point out little details that we would otherwise have missed.

We covered the tunnels through Nord and Konrad stations and along to PzW713 and all around the A1- 3 area. This is in effect an underground marshalling yard where several trains could pass and be restocked (loop around past A3 and several sidings off the tunnel to its east).

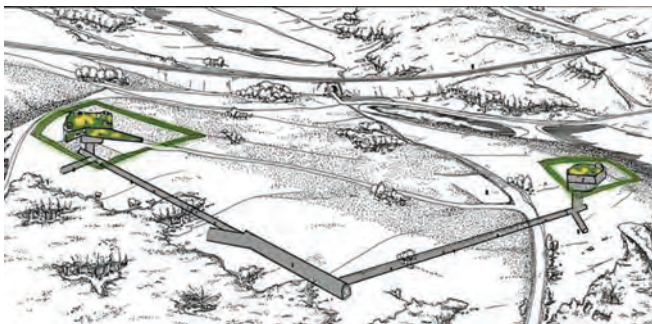
At one point Raf showed me a very small bit of graffiti that he had sprayed on as a teenager; he told me he started exploring the tunnels with his father and uncle and by the time he was 14 they trusted him and his friends to explore on their own. Kate pointed out graffiti of two of the original explorers who she said are still going into the tunnels at 62 years old. Mike Moore



A schematic of how the PzW719 part of the MRU was designed to be used

pointed out that some of us were already older than that and this is when I realized I was the oldest on the weekend at 67½! Of course I resisted the temptation to record this for posterity in graffiti.

At the appropriate (obviously pre-arranged) time, we were shown into one of the side passages where a hot meal waited for us. This was provided by the Bunkerites who had carried it all (including plenty of beer) down many flights of stairs. We had pork escalope, the same as in our communist hotel the evening before, but it tasted much better underground! On our way out later, we met Kate and some other Bunkerites going back down again to retrieve all the rubbish, cooking pots, plates and so on. Their efforts really were so much appreciated – not our first underground meal and hopefully not our last.



A schematic of how the PzW719 part of the MRU was designed to be used

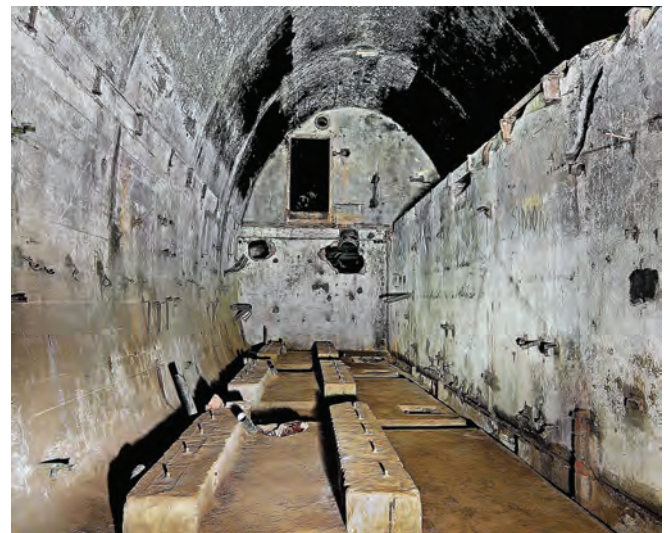
Schill Bunker

This was visited between parts two and three of the MRU and would have been connected if the system were completed. After driving across a bridge with a weight

limit that I am sure was less than our coach, in true Sub Brit fashion, we arrived at a picnic site in a wood. The bunker was about ten minutes' walk away.

We entered *Werkgruppe 'Schill'* via P z W 7 5 4 (not on the MRU plan). This entrance was so badly damaged that from not too far away it looked more

like a bit of natural geology. However the stairs down were (mostly!) in reasonable condition. Once down to the bunker level, there was a passage about five minutes' walk to get to the rooms on two floors.



Mountings for the generators in the Schiller Bunker

The whole place was very damp and no original equipment remained. The concrete and steel block entrances (PzW757 was linked but we didn't go there; it's at the other end of another longish access tunnel, then up some dodgy stairs) housed artillery and machine gun positions. Underground were crew quarters, machine rooms, comms room, fuel and water storage tanks on two levels.

With grateful thanks to Chris and Raf for organizing this very successful weekend; everything ran very smoothly with great support from Raf's fellow members, friends and family!



The way into the second bunker in the Schiller complex, with pipes for various services clearly visible

Photos by Chris Irwin unless stated. Plans from Mike Cox.

References:

Steam Railway Museum: www.parowozowniawolsztyn.pl
 Explosives Factory: www.dag-krzystkowice.com/glowna.php
 MRU Bunker: <http://bunkry.lubrza.pl>
 Plan from https://en.wikipedia.org/wiki/Festungsfront_Oder-Warthe-Bogen#/media/File:MRU_schemat_podziemi.svg
Books recommended (by others on trip – the last three are not in English)

- *Germany's East Wall in World War II* Neil Short ISBN: 9781472805867
- *Befestigungsanlagen und bunker im dritten reich* Robert Jurga ISBN 9783939284628
- *Architectura Militaris* Robert Jurga ISBN 8386489017
- *Katalog Festungsfront Oder-Warthe-Bogen* Robert Jurga/Anna Kedryna ISBN8386489016

URGENT APPEAL:

Flooded ROC Group Control at Craigiebarns, Dundee, needs your help

The ROC Caledonian Area Sector Control at Craigie Barns on the outskirts of Dundee closed in 1992 following the stand down of the Royal Observer Corps. The three-level bunker was in the back garden of Craigiebarns House which was the admin centre. The house was sold to a developer who donated the bunker to the Civil Defence and Emergency Service Preservation Trust. The Trust was formed in 1999 in order to look after a range of Civil Defence sites including police boxes, police stations, ROC monitoring posts and the ROC 28 Group Control bunker. It also maintains several fire engines including two Green Goddesses. The trust is a registered charity and run by Sub Brit member Ward Westwater.

Restoration of the bunker started almost immediately. In 2005 another Sub Brit member, Gavin Saxby, joined the team as co-director of the trust to manage the restoration of the bunker. Craigiebarns is the only remaining Royal Observer Corps sector bunker left in original condition in the UK — and the only group bunker remaining in Scotland.

On 28 July this year a volunteer helping to restore the bunker entered through the blast door, only to discover up to six inches of water in the lowest level. The washer in the tap for the kitchen water heater originally fitted when the bunker

opened in 1962, had eroded, failed and allowed mains pressure cold water to flow out of the tap which overwhelmed the sink and then flooded the bunker. The water has gone nearly everywhere: the air return sump in the plant room was flooded to the top, the ladies and gents bathrooms and dorms were flooded, group operations and everything underneath it were affected too. The water got down the canteen stairs and has filled the cable ducts under the sector operations carpet to the top.

Gavin takes up the story. “We’ve lost a lot of ROC Magazines which were in boxes on the canteen floor, our second flash trainer (spares/repairs only fortunately) is not at its best and all our soft furnishings, paperwork and books are in danger because of the high humidity. We’ve got the deep standing water pumped out of the teleprinter room (the lowest point of the building, it was 6” deep in there). We have dehumidifiers on hire this week to get humidity levels under control but we need help in a number of areas:

Large format printer: the bunker has an HP DesignJet 800PS printer for printing all our charts, totes, maps and plans. We lost all our paper roll (24”, 36”, 42”), spare ink and print heads because they were in boxes on the floor. We really need all of those again before we can reprint everything which has sagged in the high humidity.

We will probably keep finding damage for weeks more yet. We are really in need of funds to help replace things and to start looking at replastering, repainting and potentially replacing any carpets we can’t save. If you can afford to donate anything to us (we’re a registered charity) then please help us out. The 28 Group website has a PayPal donation button.”

<http://28group.org.uk/>

(See www.subbrit.org.uk/rsg/sites/c/craigiebarns/ with latest news on their Facebook page:)

www.facebook.com/28group

Photo by Gavin Saxby



The radio room which is used once a week by the local Raynet group for their meetings.



Underground in Heligoland

Stewart Wild

I always love visiting islands, so when the arrangements for the Sub Brit weekend in Hamburg were announced, it seemed a good idea to plan a short add-on trip to Heligoland, and John Lill and John Poole decided to come along too.

Heligoland is a small island in the North Sea some 35 miles off the coast of Schleswig-Holstein, northwest of Hamburg. It is about a mile long and a half-mile wide, with steep red sandstone cliffs 180ft high at the northern end. The neighbouring island of Dune is little more than a large sandbar. Known to some older people in England as a former shipping-forecast area (which became German Bight in 1956), Heligoland has a complicated history and for about a century was actually under British rule. These days it's better known as a seal and seabird sanctuary and a duty-free resort.



Heligoland at the turn of the 20th century

A little history

In the Middle Ages, ownership of Heligoland (German spelling) fluctuated between Denmark and the Duchy of Schleswig, becoming incontestably Danish after 1714. A century later, at the height of the Napoleonic Wars, the British feared that neutral Denmark was going to enter an alliance with France, and the Royal Navy was sent to invade the island with a pre-emptive strike successfully achieved in 1807. Thus the island joined Gibraltar and Malta as a strategic landmark for the British military and a base for the Royal Navy.

In 1890, however, Britain agreed to cede the island to Kaiser Wilhelm's Prussia in exchange for Germany's agreement to give up its spurious claim to Zanzibar, an island that Britain coveted for commercial reasons and later annexed even though it was technically independent at the time.

The Germans soon developed their new possession with a dockyard and railway, and fortified it with massive gun

emplacements and tunnels. Heligoland became an island fortress to protect the coast and the estuary of the River Elbe. It also sheltered minelayers and submarines, which the Germans put to good use during World War I when the islanders were evacuated and thousands of German troops occupied the island.

After Germany's defeat in WWI, the Treaty of Versailles required that all military installations on the island be dismantled.

World War II

The island was fortified again after Hitler came to power, but on a much larger scale. By 1941 hundreds of reinforced gun emplacements, bunkers and flak towers had been built, and a massive submarine pen 156 metres long and 94 metres wide contained five 250-ton U-boats. There were underground ammunition stores, and a vast network of service tunnels and command centres. Tunnels were also built as air-raid shelters for the civilian population.

A narrow-gauge railway ran the length of the island to provide ammunition for the guns and two short runways were built on the enlarged Dune island for the Luftwaffe. The naval base and fortress island was considered a major threat by the Allies and became the target of mine-laying and bombing operations by the Allied air forces. The first RAF bombing raid in December 1939 was followed by a series of attacks throughout the war which left the island a mass of craters and wrecked buildings. The immensely strong U-boat pens, however, resisted until April 1945, when a massive raid by over nine hundred Halifax and Lancaster aircraft, some armed with Tallboy bombs, left the island uninhabitable. The war in Europe ended three weeks later.

Operation Big Bang

After the war, Heligoland came under British military control as part of the Hamburg sector. In July 1946 a reconnaissance party was sent to report on what was left of the German occupation. They found huge quantities of German munitions, high explosives, depth-charges, shells and mines stacked in part-damaged underground bunkers and tunnels. It was decided that the only solution was to blow the whole lot up in one go, and over 400 tons of TNT and detonators were imported by the Royal Navy and packed in position over the next few months. Thus on 18 April 1947 a small flotilla of British warships was stationed about ten miles to the south, small explosions were detonated to scare away migrating seabirds, the photographers steadied their tripods, and at precisely 1100 hours Operation Big Bang's firing button on HMS *Lasso* was pressed.





*Tallboy bomb exhibit outside Heligoland Museum.
Photo John Lill*

The explosion was enormous, and is regarded as the largest-ever in peacetime. Seismographs as far away as London and Paris recorded the event.

Heligoland is restored to Germany

The island remained under British control for five more years, during which time it was used as a convenient target for RAF bombing practice. It was formally handed back to Germany in March 1952, giving the German authorities the awesome task of clearing the wreckage, defusing unexploded ordnance and making Heligoland habitable again.

In the 1950s and 1960s new houses sprang up along paved alleyways, many with extra rooms to serve as tourist accommodation. No large hotels blight the landscape, but there are plenty of guesthouses and a 140-bed youth hostel. Cars and bicycles are forbidden, but there are a few electric vehicles for use by the emergency services and island utilities. The present population is about 1,100.

Our visit

We reached the island by taking the 587-passenger high-speed catamaran from Hamburg's Landungsbrücke, a short walk from the hotel used for the Sub Brit weekend. Check-in for the morning Halunder Jet departure was quick and easy. The first half of the three-hour crossing is down the Elbe estuary, with a brief stop at Cuxhaven. On arrival, we stayed in a small guesthouse, Haus Nickels.

The island's small town comprises a lower part and an upper part some sixty feet above, connected by stairs and a lift. There is no shortage of small bars and restaurants, nor of tax- and duty-free shops offering alcohol, tobacco, perfume, clothing and electronic items, for Heligoland has a special exemption from Germany's 19% VAT. This helps to make the island attractive to short-stay visitors throughout the summer.

We visited the superb little museum, which offers displays on local life and art, prehistory, geology and fossils, fishing and wildlife. Later we walked the cliff path, past hundreds of nesting gannets, guillemots and

razorbills and the occasional cormorant. Brick pathways and fenced overlooks plus odd bits of misshapen wartime concrete indicated where once-murderous heavy guns were situated. Overgrown craters scarred the landscape. The old flak tower now serves as a lighthouse.



Air-raid shelter tunnel. Photo John Lill

We get underground

But of course our main aim was to find out how much remained that could be explored underground. Fortunately our visit coincided with the twice-weekly tour of the only remaining air-raid shelter tunnel, and although our guide spoke only German, it wasn't too difficult to understand what he was talking about.

In the upper part of the town, we entered down a double staircase some 15 metres deep. The air-raid shelter/tunnel ran slightly downhill and was bare save for a few electrical bits and modern lighting. There were a few side rooms, originally for meals/medical/toilet/mother-and-baby use. After 85 metres the tunnel was blocked; this was where the rest of the tunnel leading to a cliff entrance had been destroyed by the RAF.

We turned back up a connecting tunnel almost at right angles to the first; this ran slightly uphill for a further 180m or so. Some side rooms had a few bits of old equipment but they may not have been original. We emerged to the fresh air up a steep staircase into a little garden in another part of the upper town.

If there are any other underground elements left after the massive destruction of World War II, I'm afraid we couldn't find them.

Further information:

After the Battle, number 154 – Heligoland;
www.afterthebattle.com
Heligoland, Past and Present; Alex Ritsema, 2007.
 ISBN 978-1-84753-190-2
www.helgoline.com/schedule/
www.halunder-jet.de/index.htm
www.helgoland.de/en/welcome.html
<https://en.wikipedia.org/wiki/Heligoland>
Short film of Operation Big Bang
www.youtube.com/watch?v=Z6hKwjoKa-c



The Royal Observer Corps after 1991– the Secret Corps?

John Shere, ROCA National Heritage Team and ex-ROC member



Full-size RAF Strike Command display board at RAF Holmpton. These large boards were not used by Support Command

What happened to the Royal Observer Corps (ROC) after 1991? Many believe the information on some websites – that the Corps fully ‘stood down’ in 1991 – is incorrect. It was true that some 9,000 volunteers and most of the full-time staff stood down together with the closure of all the Posts, Group and Sector Controls, but, as many more enlightened SubBrit members know, a small number of us continued until December 1995.

ROC Politics and Paymasters

Why, and what were the ROC doing? Firstly we need to remember the politics following the collapse of the Berlin Wall. It was clear that many major cuts in defence could be made. Perhaps it was only a matter of time before the ROC came under the spotlight prior to the 1991 axe? However as always happens there were things going on behind the scenes.

It did not help that the ROC really had two masters. These were the Home Office and the Ministry of Defence (RAF). The Commandant of the ROC, who was normally an RAF Air Commodore, was responsible to the Home Office, United Kingdom Warning and Monitoring Branch for operational efficiency and to the MoD, Civilian Management for the administrative efficiency of the Corps. The headquarters had also always been located at RAF Bentley Priory.

The Home Office was the paymaster for the Corps but they were working behind the scenes to field their own electronic units that would automatically record and measure nuclear blasts. These were the DFBGs (Direction Finding Blast Gauges), colloquially also known as ‘George’s Balls’, that were being developed with Home Office funding. They did not go into service. Examples of these units can be seen on display inside the bunkers at Hack Green and RAF Holmpton.

Did the Home Office seem to be unaware or forget the small specialist ROC teams who manned the NRCs (Nuclear Reporting Cells) inside mainly RAF and Royal Navy bases? No, because the Government announcement in July 1991 about the Corps said, ‘The ROC would stand-down, except for some 230 members of NRCs who would continue whilst a review was carried out’. These were the ROC personnel whom many people have never heard about.

Nuclear Reporting Cells

The primary function of the NRC was to provide a nuclear burst plot and fallout prediction service, based on data provided by the United Kingdom Warning and Monitoring Organisation (UKWMO) for the benefit of certain Service establishments.

Their secondary function was to liaise with the parent





Observer P. J. Chaplin
Observer S. J. Smith
Observer G. A. Paul
Observer P. R. Plant
Leading Observer P. A. Sawford
Leading Observer G. Smith
Observer C. C. Brown
Observer T. A. D. Halling
Observer Lieutenant D. K. Roberts
Observer F. K. Milford
Chief Observer J. W. Shere
Observer P. T. Gisby
(Not in the photograph; Observer A. J. Mills.)

have made a very strong case to the government for this to happen. The services (mainly RAF) were also now going to fund and run these teams. We would now only have one master.

You may wonder how they knew this would work using civilian volunteers? Of course the RAF knew how skilled and committed the ROC personnel were, added to which the manning of an NBC Cell had already been trialled very successfully. In June 1990 contacts between 28 Group ROC Dundee Sector Control and RAF Leuchars had given authority for this trial. Volunteers were selected to make up what was called Crew 4 from the existing Sector Control Crews. They needed three or four teams to operate the NBC Cell.

The Crew met every Thursday and learnt the joys of working in NBC suits and respirators. They were fortunate that at Dundee, Lieutenant Commander Peter Blockley had spent a good part of his earlier Army career as an instructor at the Defence NBC Centre. After intensive training the RAF considered this a success and agreed we could do this role in the future.

UKWMO Group or Sector Control when further details and interpretation of the fallout plot were required by the Service establishment.

This meant that Service Commanders could quickly view or request tactical radiological or expected damage information direct from the NRC team as they were working inside their command HQs.

After the stand-down the Service units still needed people with plotting skills. The services had trained some personnel in these skills but that was just a secondary role that they had not done for real. It was also said that as they were sent on courses and did not volunteer, they had little interest in doing it. Factor in that these people were now posted around the world, and the designated Service bases now had a gap in this capability.

The NRC's did continue to train so technically they never did 'stand down! The result of the review was that as well as the existing team members, more were required for a new role. The role had been changed to manning NBCC's (Nuclear, Biological and Chemical Cells).

The role of an NBC Cell was to receive reports relating to nuclear, biological or chemical attacks. These would be assessed and evaluated and, as well as being plotted, the teams would provide upwind warnings, predictions of casualties and damage. For nuclear events, fallout would also be predicted. Only military-supplied tactical information could be used, as the information from ROC Posts was now no more!

Observers recalled

A small number of "stood-down" Observers were contacted to increase the numbers needed to man the NBC Cell teams. It was a great surprise to those ROC people who were selected to receive the letters requesting their service, and I was certainly delighted to be invited to join the new team at RAF Brampton. The RAF must



Crew 4 in their new 'uniforms'

Change in status

One concern to Service chiefs was whether we would actually report for duty in a national emergency, as we were formally 'Uniformed Civil Servants'? I am only able to speak on behalf of myself and my colleagues in Bedford Group Control, and I know that we would have done so. I am sure the Corps as a whole felt the same. We had a deep sense of duty and had made contingency plans for our families if the worst ever came. This concern had been formally addressed in 1991 when we were asked to agree to a change for our new conditions of service. As a result we would be subject to Military Law and would receive full service pay and safeguarded jobs if called for service in a National Emergency. One advantage would be that we would get similar conditions of service to those of the Royal Auxiliary Air Force. There were many other changes. Our level of security

clearance was enhanced and some failed this vetting. The first change we found on our initial team meeting was that our ROC Group number had to be removed from our uniforms. This made sense as there were now no longer any ROC Groups or Sectors.

New roles as Observers

In my case, the new RAF Brampton NBC Cell team comprised some of the previous NRC with ex-Crew members from Bedford Group Control (like myself) and even an ex-Post Group Officer. All new members had initially to revert to Observer status.

It became clear that the RAF were not so concerned about the nuclear threat and that all the original ROC procedures and training material could no longer be used. Chemical calculations, warnings and plotting were to be the priority; knowledge of deadly chemical and biological agents was new to us all.

We started to learn the STANAG military methods which were very mathematical. We had to learn very quickly and over a short period of time we lost some of the team. One had failed the security check and others found the new way of working was either too difficult or alien to them. Those of us who were undertaking the instructing to the team were learning the aspects of the military methods in our spare time and instructing the team in the following week. It was very intensive.

The final team comprised one Officer, one Chief Observer (myself), two Leading Observers and nine Observers. We met every week and our training venue at RAF Brampton was the classrooms of the Education Section inside the Station Headquarters.

NBC Cell Locations

Our Cell was not underground but in the bottom of a building which looked like a Barrack Block. In fact the building was not used for accommodation. It was strengthened and the lower-floor windows were covered in steel with outer grilles.



Whitworth Block at what was RAF Brampton. Now sold and awaiting being turned into new houses. Photo John Shere
So now you must be very disappointed that we were not underground in a bunker. Sadly there was not one on the station. Some of us thought that in the event of the 'real



RAF Brampton Station Headquarters. This was our training location every week. This is destined to be shops to support the new houses. Both photographs were taken in May 2015.

thing' we were going to be taken somewhere more secure. However, other NBC Cells did have an underground location. The panel shows all the locations. You will notice that two locations are for the Army and five were at Royal Navy stations.

The service locations used from 1991 until 1995 were kept 'hush hush' and we were not even allowed to meet other teams. However, many locations now no longer exist and the information is now in the public domain.

Nuclear, Biological and Chemical (NBC) Cell Locations

RAF Bentley Priory This had an underground bunker which was demolished in 2009 during redevelopment.

RAF Boulmer This had an underground location.

RAF Brampton Above ground. Now closed.

RAF Buchan This had an underground location.

RN Greenock This was above ground.

RAF High Wycombe Had an underground location.

RAF Holmpton Had an underground location. No longer RAF.

RAF Leuchars Above ground. Now an Army base.

Maritime HQ Northwood Had an underground location.

Maritime HQ Pitreavie Castle Had an underground location. Now closed.

Maritime HQ Plymouth Had an underground location.

RAF Oban Above ground. Now closed.

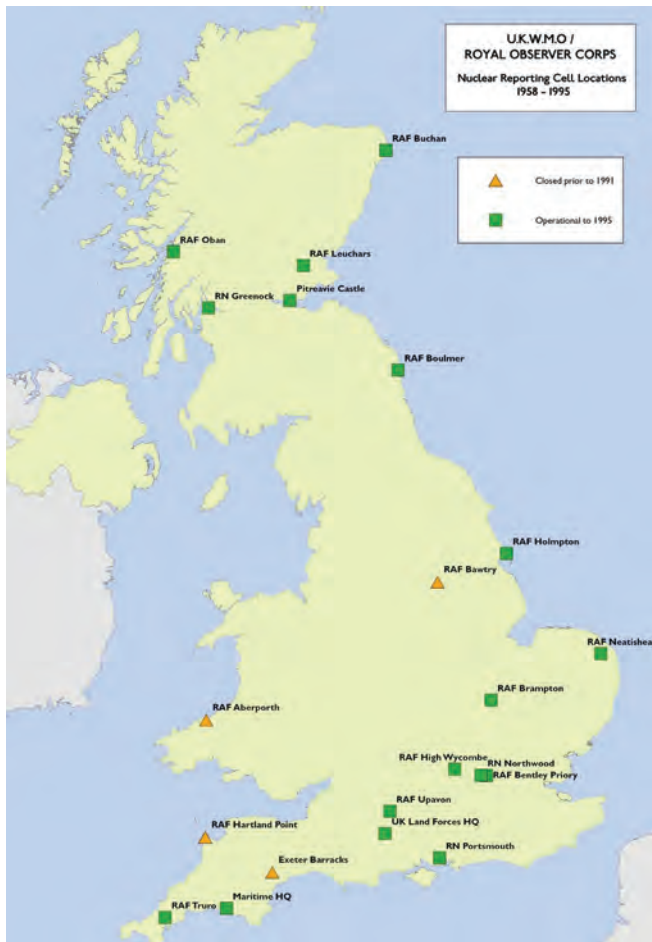
RN Portsmouth Training was above ground.

Truro (RAF) Above ground. Now closed.

Upavon (Army) Above ground. Now closed.

HQ Land Forces Wilton Had an underground location.





The early Nineties

The NBC Cells trained from 1991 until the end of 1995. During this time they were supported by a very small number of full-time ROC staff at the ROC Headquarters who were also retained. These stayed in our original HQ at RAF Bentley Priory until 1996.

Also during this period we became very proficient in our new role wearing full NBC suits and respirators. Many Officers and supervisors also completed the course to become NBC Cell Controllers. This course had originally been for Service Officers and SNCOs only. To the surprise of the forces we always got good results. The training notes from the NBC School were also a great help for our training and exercises. I also remember that the station RAF Regiment Flight were very helpful in providing all the NBC clothing that we needed.

1995 Stand-down

We were expecting to get a new computer-aided system when once again the axe came down at the end of 1995. Why did this happen? Were we a victim of our success? Some said that the RAF Regiment was being considered for major cuts and that many officers and other ranks would lose their jobs and receive smaller pensions. Clearly some senior officers persuaded the RAF/MoD that it was best to stand-down the volunteer members of the ROC and replace us with RAF Regiment regulars. This cannot have been decided on cost! If anyone knows the full story I would like to hear it. We do know that the lower ranks didn't want this role – they wanted their

“Action Man” tasks.

At this time defence cuts were being driven by low threat levels for the UK. It was a period when NBC could have stood for ‘NoBody Cares’. Events were to change shortly afterwards. In 1995 there were Sarin nerve gas attacks in Japan and in 2001 anthrax was used in the USA. Global terrorism had arrived.

Against this new background it was now clear that NBC was a new major threat. The RAF Regiment role was now replaced with a Joint Services NBC Regiment. Then there were the alleged Weapons of Mass Destruction in Iraq – and the rest is history.

ROCA Reunions

On the fifteenth anniversary of our 1995 stand-down, remaining past members of NRC and NBC Cells had a special celebration lunch in Chester. This was at the annual ROCA reunion in 2010. The event was to remember the unique teams of the Royal Observer Corps and was organised by the ex-NBC Cell Officer from Truro – Lawrence Holmes. Many readers will recognise Lawrence as a regular contributor to this publication and as a Visitor Guide at the Veryan Post. This is now owned by the National Trust. This year, of course, will be our 20th anniversary.

This year is also the 75th anniversary of the Battle of Britain. In 1941 the Royal Observer Corps gained the Royal Warrant for the key role that they played in the victory, the only organisation to receive such an accolade in wartime. In 1944 the Corps again had a special role going ‘Seaborne’ in the D-Day Landings. If you are not aware of these roles, visit our special heritage web site: www.roc-heritage.co.uk

Also please visit the wonderful restored Bentley Priory mansion building which was the former Fighter Command and ROC Headquarters location. This houses a unique Battle of Britain museum. See where the air defences of England were planned and the Battle of Britain was masterminded. www.bentleypriory.org.



A team at work training in an NBC Cell. In this location (not RAF Brampton) data was received and sent out on the left and Observers were plotting and undertaking analysis on the right. Note the full team would split into smaller teams for 24-hour working



Discounted Cotswold Shopping

Cotswold Outdoor have granted Sub Brit members a 15% discount on their products (excluding sales and special offers). The details are included in a letter on the website at www.subbrit.org.uk/docs/discount-cotswold-outdoor.pdf

If you are not able to access the website, then please contact us with an SAE for a copy of the letter.

The discount code can be used in any of their 58 stores (there is a barcode on the letter), and for telephone and online orders.

**** Please do not share or abuse the code as this may lead Cotswold to withdraw it which would be a great shame and spoil things for the rest of our members. ****



Here is an introduction from David Hague of Cotswold:

“Cotswold Outdoor are proud to be a supporter of such a prestigious organisation as Sub Brit. As most of your members are aware, Cotswold Outdoor is a multi-award winning retailer with numerous thriving stores located nationwide. Not only are we proud of our knowledgeable staff, but our stores stock one of the most comprehensive ranges of outdoor clothing and equipment in the UK. With a huge range of footwear, waterproof jackets and fleeces, tents, sleeping bags and outdoor accessories, we offer one of the best selections of clothing and equipment right on your doorstep.

Whoever you are and whatever you need, when you shop with us you can be assured of expert, award-winning service and advice that comes from 40 years of experience in retailing. We’re really looking forward to welcoming you to our store, online or over the phone soon. I hope that our discount helps your members purchase the right kit and equipment as they continue with their important and valued pastime. We are passionate about giving the right advice and recommending the right clothing and equipment so you can have peace of mind while out in (or should that be under!) the field.”

How do I renew my membership using the new MySubBrit system?

Simple

Go the Subterranea Britannica website homepage: www.subbrit.org.uk

On the top line click Membership

At the bottom of the page click the middle button to log in if you know your Username & Password

If you are unsure of your username or password click the right-hand button, fill in your email address and click on E-Mail new password; the system will send you an email with your username – click on the link in the email and then ‘log in’ and it will display your user name. Fill in your new password and then ‘save’.

Please note your user name and password for future use.

OR go direct to <https://my.subbrit.org.uk/> and log in.

Click ‘renew membership’.

Check the information on the form is correct, if not please amend

Choose your payment method and press contribute, PayPal is preferred

If you wish to pay via bank transfer (BACS) or cheque a new page will appear with payment instructions which are

PAY BY CHEQUE

made payable to “Subterranea Britannica” and sent to:

Tony Radstone

Treasurer Subterranea Britannica

Buckby House

Wharf Lane

BOURNE END

SL8 5RS

United Kingdom

Please write your name and postcode on the back to enable us to match it against our records.

DO NOT send cheques to Nick Catford

PAY BY BANK TRANSFER

Please make payment to the account below, quoting your surname and postcode.

For example, “Cameron SW1A 2AA”:

Unity Trust Bank plc

Birmingham

08-60-01 20204417

If all fails and you need further assistance please email either

Nick Catford: membership@subbrit.org.uk

or Tony Radstone: treasurer@subbrit.org.uk

